The Practice of Practice

Jonathan Harnum

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The Practice of Practice by Jonathan Harnum

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for Michelle

With sincere thanks to these generous musicians

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Erin McKeown
Allison Miller
Peter Mulvey
Colin Oldberg
Nick Phillips
Michael Taylor
Prasad Upasani
Serge van der Voo
Stephane Wrembel

Dedication

To the Memory and Vision of Music Education Pioneer Bennett Reimer

It is how music is connected to life that makes it so important for people. To understand music is to understand its intimate connections to all of human experience. To experience music is to experience how we as individuals are connected to all other humans in our communities and all other communities in the world and in history. Music is all-encompassing.

Bennett Reimer (1932-2013)*A Philosophy of Music Education, p. 60*

Part One

What's Goin' On?

What Practice Is, What It Does to You, & Why It Matters

Learning without thought is labor lost;
thought without learning is perilous.

Confucius (551-487 BC)

Pick-Up Notes

Names have power. Definitions of what practice is (and isn't) can either lift you up or hamstring you. According to every professional musician I've spoken with, practice is a lot more than sitting in a room alone, working on technique. Practice does some cool things to the brain, too. Knowing what the brain requires for solid, long-term learning will help you get better at music, or anything else.

Chapter 1
The Chicken or the Embryo

The sweat of hard work is not to be displayed. It is much more graceful to appear favored by the gods.[1]

Maxine Hong Kingston, author (b. 1940)

Zing-Yang Kuo rubbed warm Vaseline over a clutch of fertilized chicken eggs. He was conducting research that examined the role genetic memory—or instinct—played in the pecking behavior of chickens. You could say Zing-Yang Kuo was investigating a young chick's "talent" for pecking.

Kuo was a developmental psychologist active in the first half of the 20th century who investigated the role of nature-versus-nurture in animal behaviors. Kuo believed that labeling behaviors as instinctive or genetic blinded us to the developmental realities that he suspected lay behind those behaviors. In the early 1920s when Kuo published his research, many believed the distinctive pecking behavior of newly hatched chickens was an instinct, a behavior encoded in chickeny genetics. Zing-Yang Kuo discovered that a chick's ability to peck is a result of a much more interesting process, one that smudges the line between nature and nurture.

As the petroleum jelly soaked into the egg shells, the shell became translucent. Kuo carefully watched the golden yolks develop into embryos. After a few days of development, the tiny proto-hearts of the chicks began to beat. Soon, the yolk was consumed by the growing chick, and each delicate crèche now contained a tightly compacted future chicken. Each chick was packed so snugly in its shell that its neck was stretched downward until its head rested directly over its tiny thumping heart.

Kuo observed something interesting about the position of the embryo's head. The motion of the rhythmically pulsing heart caused the developing chick's head and neck to move in a way that "precisely mimics"[2] the characteristic pecking motion chicks use when feeding. The pecking motion is *not* encoded in the genetic code. Instead, the chicks practice the pecking behavior thousands of times inside the egg before hatching.

The kind of practice chicks are doing inside the egg is certainly *not* deliberate practice. Call it "circumstantial practice." It's kind of like practice that happens because of where you grow up. Indian classical vocalist Prasad Upasani said, "We have a word for it called *samskar*, which basically translates to 'unconscious influence.' Basically you develop an ear for music. It definitely helps to be exposed to a lot of music at an early age."

Prasad Upasani is an accomplished vocalist in the Hindustani classical musical tradition of northern India. One of Prasad's earliest memories was waking to hear his father's singing practice early in the morning. Sometimes young Prasad would toddle in and sing some of his favorite melodies with his father. He spoke fondly of those early-morning sessions with his dad. Researchers have found that many professional musicians' early experiences with practice were pleasant or fun.[3] It stands to reason that if practice is pleasant or fun early on, we'll want to do more of it. A good thing to remember if you're a beginner of any age, or a parent.

Some practice takes place because of where we happen to be. You can see *Samskar* in the biographies of lots of accomplished people, including Sona Jobarteh, the only female kora virtuoso in the world. She grew up in the rich sonic environment of a Griot family in Gambia, West Africa. The Griot tradition is a venerable one, going back over 700 years. Griots were musicians and dancers who traveled throughout the Mali empire bringing news, diplomacy, and ceremonial services to commoners and royalty alike. Ms. Jobarteh first began to learn kora at age four from her brother, Tunde Jegede.

Or consider master tuba player and teacher Rex Martin. Both of Rex's older brothers played tuba, so Rex's auditory cortex was exposed to the sound of the tuba before he was even born. Neuroscience tells us that when the brain hears a new sound, it gets to work processing that sound until it recognizes the input, helping us attend to the sound more closely. Rex's young brain received tuba listening practice very early in his development. There is some pretty solid scientific evidence that babies in the womb can learn songs and sounds, one of the most important sounds being mommy's voice.[4]

The *samskar*, or unconscious early experiences of Prasad, Sona, and Rex are similar to the chick practicing its pecking behavior inside the egg. Unconscious influences like these are one source of the pernicious notion of "natural" talent, the idea that you're either born with musical ability or you're not. There is a great deal of lively, sometimes heated debate as to whether natural musical ability exists.[5]

For our purposes, natural musical ability is a can of worms best left alone, because the answer to the question, fascinating though it might be, has nothing to do with getting better. Whatever gifts have been given or withheld from you, practice is still the *only* way to get better at anything: music, chess, sports, programming, parenting.... Anything.

The good news is that beneficial circumstances like a rich musical environment aren't crucial to getting really good at something. Lots of great musicians—including several I talked to about practice for this book—didn't have the benefit of a rich musical childhood. Although it certainly helps, no matter how musically blessed someone may be by circumstance, practice is *still* the only way to get better.

If you want to get better, you simply *have* to practice. There's no way around it. Even though Prasad, Sona, and Rex all had beneficial early experiences with music, each has had to spend thousands of hours in practice to acquire their musical prowess. Rex told me, "If people could've lived my life and all the hours I've spent practicing the tuba alone in some little room someplace, they probably wouldn't label me as being particularly talented."[6]

And yet, Rex Martin is supremely talented, veteran of thousands of professional recordings and performances around the world alongside other world class artists, some of whom might surprise you. Chicago Symphony? New York Philharmonic? Luciano Pavorotti? Rex is a master of classical tuba, so these credits are impressive, but not surprising. Rex has also played with Grammy Award winners like R&B pioneers Earth, Wind & Fire, the father of Soul, Ray Charles, and legendary Jazz vocalist Sarah Vaughn.

To see talent as a gift of natural ability instead of perceiving the long hours of practice that creates talent is nothing new. Michelangelo said, "If

people knew how hard I had to work to gain my mastery, it would not seem so wonderful at all.”

Rex, Sona, and Prasad are talented because they have practiced, and because they *continue* to practice. Diligently. Rex said, “There is no such thing as maintenance. If you’re not trying to get better, you’re getting worse.”

And here’s the thing: practice is *not* just sitting in a room, playing scales and repeating passages. *Samskar* is just one of the semi-hidden ways people get better at music. There are many others. I’ll show you more in the coming pages.

Musical ability doesn’t come from either the chicken *or* the embryo, it’s the chicken *and* the embryo. Talent isn’t some mysterious natural ability. Talent is practice in disguise.

And practice is more than you think.

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[1] Hong Kingston, 1976, p. 64

[2] Firestein, 2012.

[3] Sosniak, 2006.

[4] Trainor, 2005; Chang & Merzenich, 2003; Hepper, 1991; Parncutt, 1993.

[5] E.g., the scholarly smackdown between Gagné, 2013 and Ericsson, 2013.

[6] All quotations from musicians in this book—unless otherwise noted—are taken from my interview with the artist.

Chapter 2
Spinning Wheel, Got to Go Round

We must not allow other people's limited perceptions to define us.
Virginia Satir, psychotherapist (1916-1988)

Chicago singer-songwriter Nicholas Barron looks like Vince Vaughn, has a voice as big as John Lee Hooker's, and writes and performs in a style all his own. Barron often opens for the legendary bluesman Buddy Guy at his eponymous Chicago blues club. Nicholas plays all over Chicago. Under it, too. As a younger man he spent his days playing in Chicago's south-side subway stations. Nicholas was one of the first professional musicians I talked with about music practice, and one of the first things he said was, "I never practice."

Barron's direct, unequivocal statement puzzled me. Because he performs with such skill and sings so powerfully, I was sure his ability *had* to be a result of many years of practice. His statement that he *never* practiced went against everything the research and popular writing on practice had been telling me. I remember thinking, "What the heck is going on here?"

Nicholas agreed to sit down for a more formal interview, one designed to answer three questions about practice: What is practice according to musicians from diverse genres? What do these musicians actually *do* to get better? And how did they learn how to practice? Over twenty professional musicians from different genres have shared their thoughts about practice with me. Some of these musicians are among the best in the world at what they do.

When I spoke with Nicholas, I'd just spent more than three years poring over research on music practice, reading hundreds of peer-reviewed studies and dozens of popular books on practice, all of which pointed to *deliberate practice* as the holy grail of learning, musical or otherwise. Much of the research—and especially writings for the general public—included the oft-quoted 10,000-hour rule, the notion that it takes at least that many hours of deliberate practice to achieve mastery in any field.

That definition—deliberate practice, and the 10,000-hour rule that goes along with it—came from a 1993 research paper by Anders Ericsson, Ralf Krampe, and Clemens Tesch-Römer, in which they presented data from four different studies of experts in various fields, including music.

Even if it's true, the 10,000-hour benchmark is a red herring for several reasons. First, the only practice that is vitally important is the practice you're doing *right now.* Forget about accumulating 10,000 hours and focus instead on today's learning challenge. Experts who accumulated 10,000 hours of practice weren't trying to accumulate those hours; their focus was elsewhere, on the task at hand.

Another reason the 10,000-hour rule of deliberate practice is misleading has to do with definitions. Musicians in that 1993 study were all Western European classical musicians. Clearly, Nicholas Barron, who said he never practices, *has* to be using a different definition of practice, because he's an excellent musician. So what does practice mean for Nicholas Barron, and what does he do to get better? His approach to practice is covered later in the book. It's pretty cool.

Erin McKeown is another musician who isn't all that interested in the word "practice." In fact, she found practice "really hard to talk about." The night before our interview, Erin said she was chatting with a friend about practice and said they spoke about how "there is a sort of identity attached to whether you practice or not."

Erin characterized it as a "sort of myth: the more you know about music somehow the less passionate you are, the less *real* your music becomes, which I think is a part of that identity. We don't want to practice because we don't want to ruin it."

That sentiment seemed to run deep with Erin, because she often avoided the word "practice" itself, and would instead say things like, "spend time with my instrument." Erin echoed Nicholas Barron's sentiment when she said, "My experience with my instruments was not about practice for a long time. For many, many, many years, I did not practice."

Another puzzling statement. Erin is a professional touring musician, veteran of thousands upon thousands of performances, and she has critically acclaimed albums under her belt. What did Erin do to get so

good? You'll learn about her approach later in the book, too. It's pretty cool, too.

I began to suspect that a better question than "how do great musicians practice" is "how do musicians get better?" Omitting the "P-word" avoids some of the baggage that seems to be associated with the word "practice."

Definitions of practice matter. All of the research published on music practice in English—and I do mean *all* of it—focuses exclusively on Western classical music practice. Some researchers have touched peripherally on other kinds of music practice, like the important work investigating learning in popular music by Lucy Green, or Paul Berliner's thorough study of jazz musicians, or Patricia Shehan Campbell's examination of music teaching and learning in non-Western traditions.[1] But even in these studies, the details of *exactly* how these musicians practice wasn't the focus.

At the moment, there are no studies I'm aware of that specifically examine how jazz musicians practice, no study on how punk rock musicians get better, no study on how singer-songwriters like Nicholas Barron and Erin McKeown practice. Nor are there studies that examine how Indian classical musicians practice, or didgeridoo players, or hip-hop artists, or DJs.... Nothing. Zip. Zilch. Nada.

Now, don't get me wrong. Music practice research done so far is a valuable resource. But limiting our exploration of practice to Western classical music is like assuming that all plants will grow in any climate. That's crazy talk. What grows and thrives in one climate will shrivel and die in another. We need to expand our understanding of how people get better to *all* kinds of music-making. Why not? Mark Twain said it like this:

> Travel is fatal to prejudice, bigotry, and narrow-mindedness, and many of our people need it sorely on these accounts. Broad, wholesome, charitable views...cannot be acquired by vegetating in one little corner of the earth all one's lifetime.[2]

I've conducted interviews with dozens of professional musicians from all across the musical map, many of them world-class performers: singer-songwriters, jazz musicians, African djembe masters, Indian

classical musicians, Western classical musicians, and musicians from other traditions, too. *Every single one* of these musicians listed a slew of activities they consider to be practice that aren't usually recognized as practice. I'm going to show them to you.

No book can give you all the answers, but I hope this book helps you think about practice in a broader way, beyond the walls of the "typical" practice room. In this book you'll find specific strategies, techniques, and mindsets that any musician needs to get better whether you play rock or Bach.

To help understand the many ways people get better at music, I've used a metaphor to organize music practice into six simple categories. Think of practice as a colorful, six-bladed pinwheel in motion. Trying to see the boundary between the pinwheel blades while the pinwheel spins is like trying to understand everything about practice at once. It's impossible to see anything clearly as the pinwheel spins: edges and colors blur together, and it's difficult to know what's what.

But if you stop the pinwheel, you can see it more clearly. You can count the blades, see their shape and color; you can see where one color stops and the next begins; you can see how it spins on its axle. Music practice is like that six-bladed pinwheel. We're going to stop the practice pinwheel to get a better look at how practice works. As we do, keep in mind the advice of martial arts master Bruce Lee, who said, "Absorb what is useful; discard what is not; add what is uniquely your own."

Each "blade" of the practice pinwheel is a book section:

1) **What**: When you know what something is, you have power over it. This section covers what practice is, how practice changes the brain, and how you can harness the nature of those changes to help you get better.
2) **Why**: Without motivation, there would be no reason to get better. This section covers motivation and explores how your beliefs affect not only your motivation to learn, but how you practice as well.

3) **Who**: Many people will have an impact on your practice, most especially your own Self. Your attitudes and behaviors and beliefs profoundly affect how you get better. There are others who can help or hinder, too, like parents, teachers, and peers.

4) **When**: Time and practice. How much should you practice? When during the day is best? What's the minimum you can get away with? How little is too little? Can you practice too much? How does music practice develop from beginner to expert?

5) **Where**: Covers the places of practice. A short section covering the practice space itself, including what makes one good or bad. This section also takes a look at how context can affect your practice.

6) **How**: What do you actually *do* to get better? What works best? This is the aspect of practice everyone wants to know, and it's the longest section of the book.

So What *Is* Practice?

Most of us have a stereotype of practice in our head: some hapless classical musician, sitting in a windowless room repeating things over and over. Sheet music is usually involved. Our stereotype of practice often includes scales, and exercises, and tons of repetition, and a general idea that practice isn't fun at all. Sure, all those things *can* be practice, but as you'll discover, many great musicians do *none* of those things.

The idea that practice isn't fun is explicitly stated in one of the most broadly adopted descriptions of practice, *deliberate practice*, which claims that practice "is not inherently enjoyable."[3] I don't believe that's true, and I'm not alone.[4] Every professional musician I've spoken with said that practice is quite enjoyable. For some, including yours truly, practice is necessary for mental well-being. Sure, practice can be challenging and frustrating and effortful, but at the same time it's engaging, and often a lot of fun. Jazz trumpeter Don Cherry summed it up best when he said, "There is nothing more serious than having fun."

There are other activities that increase one's musical ability, not just practice time alone in a room. I believe anything that increases your musical ability is practice, and I'm not alone there, either. Here are just a few activities highly accomplished professional musicians consider to be practice, not in any particular order:

◊ Listening
◊ Performing
◊ Watching others perform
◊ Playing informally
◊ Improvising
◊ Teaching
◊ Composing
◊ Group rehearsal

Over the course of the next couple hundred pages, I'll show you these and more strategies that musicians use to get better. Good practice is a lot more than you think. It can also be a lot of fun.

Strategy vs. Technique

Knowing the difference between a strategy and a technique is important for getting the most out of this book. The two are interrelated. A strategy is a learning approach that anyone of any skill level can adopt. Technique is the skill necessary to use the strategy well. Here's a simple example.

When great musicians practice, they go slowly enough that errors are avoided. When an error does crop up, expert practicers fix those errors immediately. That's the strategy: fixing a mistake immediately. Anybody can do it, and anybody who adopts that strategy will get better faster than those who don't.

The *technique* necessary for the strategy of fixing errors immediately is based on your ability to actually *perceive* the error, a common difficulty for beginners. Skill at perceiving errors will help you get the most out of the strategy of fixing mistakes immediately. Throughout the book I'll call your attention to lots of strategies, as well as the techniques you need to squeeze the most juice out of a strategy and make it really work for you.

Understanding how the brain learns and what long-term music practice does to the old gray matter in your noggin will also help you practice smarter. Knowing some of the neural mechanisms of learning has certainly affected my own approach to practice, and I bet they'll have a positive impact on your practice, too. They're covered in the following chapters.

But First: Extensions

In music theory, extensions are chord tones added to basic chords that give the chord more color and often a greater sense of forward motion. In education, extensions are activities or exercises that can be done in addition to the main lesson. In this book, extensions are links to more information: videos, websites, recordings, books, and anything else that connects to the chapter's theme. The more ways you can connect to an idea, the better that idea and information will stick in your head, and the more useful it will be. These extensions have been carefully chosen to help with that process.

If you're reading this on a Web-connected device, click on the HTML links to access the extra information. Or you can visit this book's Extras page that contains all the links in the book, grouped by chapter. Find that at this book's blog at www.ThePracticeOfPractice.com.

Extensions

I'm Not Superman

One of Nicholas Barron's many excellent tunes. He also uses mouth percussion as he plays. On the Web: http://bit.ly/1sORoI2.

That's Just What Happened

Erin McKeown sings and plays piano and guitar on her tune that evokes *St. James Infirmary* before it gets lively. On the Web at http://bit.ly/1hZPSxA. Hear Erin's interview on practice at http://bit.ly/1hZTIqz.

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[1] Berliner, 1994; Green, 2002, 2008; Shehan Campbell, 1991.

[2] Twain, 1869, p. 650.

[3] Ericsson, Krampe, & Tesch-Römer, 1993, p. 368.

[4] E.g., Hodgkin (1985) who wrote, “enjoyable practice does not have to be lacking in rigor” (p. 45); and “play is there at the beginning, and it remains central” (p. 52).

Chapter 3
Your Plastic Brain

If you change the way you look at things, the things you look at change.
Wayne Dyer, author (b. 1940)

The days when a ballet causes a riot are probably gone forever, but when Stravinsky's ballet, *The Rite of Spring* premiered in Paris on May 29th, 1913, the audience went bonkers, or so the legend goes. The music and imagery were so controversial that pandemonium erupted: all available vegetables were hurled at the performers; fights broke out; old French biddies beat each other with canes; blood may have been spilled. Dancers and musicians were chased down the dark springtime streets by the enraged audience. Mayhem! It seems the debut caused more of a tempest in a teacup than a true riot. Stravinsky knew that controversy sells, and some believe the composer himself may have encouraged the legend.

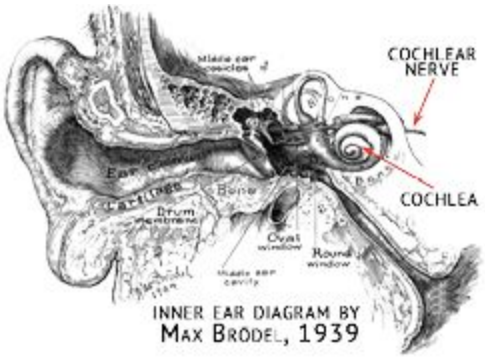
True or not, the riotous story of *The Rite of Spring's* premiere is a good way to start thinking about change and learning as it relates to music. In the spring of 1913, the new harmonies and musical ideas Stravinsky debuted in *The Rite of Spring* were dissonant, the melodies and rhythms jagged and angular. These sounds were worlds away from the gentler tonalities ballet-goers were used to hearing, to say nothing of the brutal story the ballet depicts. The change was so radical that it's easy to imagine those French biddies whacking about with their canes in a confused, angry panic.

Although sacrificing virgins in a pagan ritual to bring about spring is a practice still more-or-less frowned upon, even in Paris, Stravinsky's ballet went on to become a much-loved piece of music. The following March, ten months later, *The Rite of Spring* was performed again in Paris, and after *that* performance Stravinsky was a hero, hoisted on shoulders, fêted for creating an amazing artwork. *The Rite of Spring's* journey toward full acceptance reached its pinnacle when Stravinsky's music was used in Disney's *Fantasia*, a film loved by children all over the world.

What had changed? How does a piece of music that was nearly riot-inducing on first listen come to be so loved that it is now appropriate

music for children? The music hadn't changed, of course: people changed. One of these changes has to do with how the brain processes sound.

Vibrations within our range of hearing are funneled by the cartilaginous structure of the outer ear to the ear's tiny drumhead—the tympanic membrane—where the vibrations are transferred yet again via the tiniest bones in the body. Finally, the vibrations are funneled into the cochlea, which then "translates" those vibrations into nerve impulses that are sent onward up the cochlear nerve to the brain.



A small section of the auditory cortex in the brain, called the *cortical fugal network*, is partly responsible for processing and making sense of this sonic input. When the cortical fugal network senses new sounds, especially radically new sounds, it gets "confused" and can't predict patterns from this new sound, emitting what's called a prediction error signal. That new sound is, quite literally, noise. The signal hasn't been parsed yet.

The cool thing is that if you hear that unfamiliar sound again a few times, the cortical fugal network begins to adapt to the new sound, finally reaching a point at which the sound is "recognized," and all is cool again, as far as the cortical fugal network is concerned. Now you can attend to that sound more closely and understand it better because you're perceiving it more clearly. Your wetware has been rewired by the vibrations, and your software—your awareness—has reprogrammed itself to understand the new sounds better. I'm over-simplifying the process a great deal, but it's an apt metaphor.

This process in the cortical fugal network is probably one reason why any radically new music is nearly always described as "noise" by those who don't understand it. Rock-and-Roll and Jazz were both criticized early

on as being noise, or trash, and each was at some point called “the Devil’s music.”[1] To an unaccustomed brain, the new music is gibberish. Gobbledygook. Noise. If that noise is also accompanied by boundary-pushing images, stories, or cool new dance moves, watch out! That’s a recipe for cultural dynamite.

Over 100 years ago, Matthew Arnold said, “The freethinking of one age is the common sense of the next.” This is brain plasticity in action. Without brain plasticity, all practice would be futile. If you’re serious about getting better at anything, it will help to understand more about how practice and brain plasticity affect each other.

The word *plastic* has gotten a bad reputation. Like the good kid who hung out with the wrong crowd, the word plastic has become tarnished by association. The word plastic was shanghaied by the robber barons of big oil and press-ganged into service so often that the word has come to mean something cheap and mass-produced, a thing of little worth, to be used and discarded.

Before plastic went out to smoke with the hoodlums around the burning oil barrel, plastic meant possibility and promise; it meant the ability to take many different shapes, whatever shape was needed. Plastic used to mean something malleable, fluid, and changing, and it still does, of course. Our brains are plastic in this good sense. Connections grow, change, and adapt, in dynamic interactions with the environment throughout life.

The number of those neural connections in the brain is staggering. Here’s a square millimeter for you to ogle (in the eBook, this may not render at the exact size):

▪

Now imagine a three-dimensional box of that size, a cubic millimeter. If you were to examine one cubic millimeter of your brain’s most densely packed neural tissue (don’t try this at home) and measure how many connections between neurons are in that tiny chunk of brain, you’d find as many connections as there are stars in the Milky Way galaxy.[2] In a whole and healthy human brain there may be over 240 trillion (240,000,000,000,000) synaptic connections between neurons.[3] Those

240 trillion neuronal connections are shaped by that which surrounds and interpenetrates you.

Interacting with the environment through the senses literally rewires the brain. Our brains are most plastic at birth, and as we grow toward adulthood, the vast networks of neurons get pruned and become more fixed, thanks in part to a protein the body begins to create in late adolescence. The pruning favors neural connections that are most useful in the environment that the brain/person inhabits.

If one of the things in our environment is the making of music, profound changes happen in that pink three-pound lump of neuron-infused jelly that sits in total darkness inside our skull. One recent study showed changes in the structure of the brain after only 15 months of music practice.[4]

In a 1995 study, a team of researchers led by Gottfried Schlaug discovered that the corpus callosum—the conduit between the hemispheres of the brain—was significantly larger in pianists who started studying before age seven.[5]

This difference in corpus callosum size is clearly important for piano playing, but it’s not clear whether there are other benefits to having a larger conduit between brain hemispheres. Schlaug and many other researchers are working to understand how music-making changes the brain and whether any of those changes bestow skills in other areas.

Edward Taub compared brains of experienced violin players with those who didn’t play an instrument. The region of the brain controlling the left hand was significantly larger for violinists. The brains of those who started music study earlier showed even more difference (some studies say those who begin study before age seven show the most difference). Although Taub studied lifelong musicians, he noted that the brain’s plasticity continues throughout life. Taub said, “Even if you take up the violin at age 40, you still get brain reorganization.”

Some not-so-surprising special abilities arise from long-term music practice. Despite the ill-informed marketing hype, music will not make you smarter. However, it's becoming clear that long-term music practice does alter the brain in profound ways. Musicians have special abilities beyond the obvious and awesome ability of making music itself, which, lest we forget, is the whole point of doing it in the first place. Extra-musical superpowers are just icing on the cake.

You'd be right if you guessed that these special abilities have to do with the perception of sound. Musicians, especially those who begin learning at a young age, have a greater ability to hear speech in a noisy environment, especially as older adults, when it's a skill well worth having. Musicians can also hear the upper notes of a chord more clearly than those without musical experience, and musicians have a keener perception of emotional meaning in the human voice. And here's the kicker: those who learned to play music by ear tend to have a greater ability to perceive these nuances than those who learned through reading notation.[6]

I'm being less cautious with these claims than one of the lead researchers in the field of auditory neuroscience, Dr. Nina Kraus. She investigates the neurobiology underlying speech and music perception, as well as learning-associated brain plasticity. Kraus and her research team at Northwestern's Auditory Neuroscience Lab were responsible for a lot of the findings I just mentioned. About these findings, Dr. Kraus wrote, "Selective enhancement of the sound stimulus in the musician's brain *may* result from a superior ability to encode predictable, relevant events in the incoming sensory stream." [6]

The developing brain is at the mercy of the sound environment in which it's immersed. A beneficial soundscape is helpful to the developing brain. Listening to great music—especially live music—is critical no matter how old you are. It's one of the hidden kinds of music practice we don't often consider. I'll introduce you to one reason why it's so important in an upcoming chapter.

Neuroscientist Michael Merzenich identifies what he calls two great epochs of development in the human brain. Epoch One is the critical period in which basic processing is set up. It doesn't take learning per se to

change the brain, only exposure. Merzenich uses sounds in the environment as an example of the ways in which the brain changes as a result of what a person hears.[7] There is some striking evidence that a very loud environment can cause serious developmental problems. The flip side is the benefit of positive sounds in your environment, like listening to good music, or silence.

Many accomplished musicians have been exposed to a lot of music from early on. Remember Prasad toddling in to sing during his dad's practice, or Rex Martin's two older brothers playing tuba? New York Philharmonic trumpeter Ethan Bensdorf told me, "My parents took me to hear the Chicago Symphony around age two or three." Bud Herseth was the principal trumpeter with the CSO at the time, believed by many to be the best orchestral trumpeter of all time. Rocker Om Johari's favorite song since she was four years old is Chick Corea's progressive jazz tune, *500 Miles High*. Hearing good music is a powerful influence on the developing brain.

Merzenich's second epoch of brain development has to do with adult plasticity, and findings from these studies are the antithesis of "you can't teach an old dog new tricks." In this stage the adult brain refines its interactions with the environment. Merzenich said, "We have a lifelong capacity for plasticity." The changes can be massive: tens or hundreds of millions of new neurons! And this means hundreds of millions, possibly billions of new synaptic connections in the brain.

If you're about to learn a new skill, take comfort from the fact that your brain *will* learn, those neurons *will* grow, but remember that, like most growth, it's a slow process. It's also crucial to realize the brain only processes what comes in, regardless of it's quality, so if you're not doing it right, you're creating neural pathways that may cause trouble. More on this important topic in the next chapter.

This chapter was just a whiff of the rich feast that is music psychology. For a superbly written, comprehensive history of the psychology of music perception, check out Robert Gjerdingen's chapter in the third edition of *The Psychology of Music*, titled *Psychologists and Musicians: Then and Now*.

Despite the fairly robust findings about the ways that music practice changes the brain, scientific exploration of these abilities, their mechanisms, and how they're acquired through practice is only just beginning. More study is needed to confirm and deepen our understanding of how music practice changes the brain.

Just as you don't need to know how to diagram a sentence in order to speak clearly, you don't need to know the nitty gritty about brain research in order to get better at music, or anything else. Some information will help, though. For example, the next chapter introduces you to one process that happens in your brain when you learn something new. I bet the information will influence how you practice.

Extensions

Rite of Spring, Nijinsky Choreography

Chicago's Joffrey Ballet performed the ballet in '89, with Nijinsky's original choreography. On the Web: http://bit.ly/SdPXI7

Brains: Mind as Matter

Great website with lots of brainy goodness. Learn about the skull plough, for instance. On the Web: http://bit.ly/1lYFPx0

Neuroscientist Sebastian Seung

Seung presents a three-dimensional, colored image of a brain's neurons, and talks about the number of connections it has. On the Web: http://bit.ly/1mRTW8w

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[1] In 1921, famous cornet soloist for the John Philip Sousa band, Herbert L. Clarke, returned a letter to future famous trumpet-maker Elden Benge, telling him the trumpet was a passing fad, and "one cannot play a decent song even, properly, on it, and it has sprung up in the last few years, like 'jaz' music, which is the nearest Hell, or the Devil, in music. It polutes [sic] the art of Music."

[2] It's still unclear *exactly* how many connections there are. See also Marois & Ivanhoff (2005) and Allen, Damazio & Grabowski (2002).

[3] Estimates of the total connections in the brain also vary greatly. Whatever the real number of connections actually is, it's got *lots* of zeroes.

[4] Hyde, Lerch, Norton, Forgeard, Winner, Evans, & Schlaug, 2009.

[5] Schlaug, Jäncke, Huang, Staiger, Steinmetz, 1995.

[6] Kraus & Chandrasekaran, 2010, p. 602 (emphasis added).

[7] Watch Merzenich's talk on the Web at http://is.gd/ocogoc.

Chapter 4
Slow Down, You Move too Fast

Be very, very careful what you put into that head, because you'll never, ever, get it out.
Cardinal Thomas Wolsey (1473-1530)

Muscle memory has very little to do with muscles; muscles are at the tail end of the process. The word make sense though, because muscle memory is a kind of memory so deep, it feels as though the muscles themselves perform the action without conscious thought. But the muscles are simply the delivery system for the actual memory residing in motor neurons and their myriad connections. Deep, automatic, flawless muscle memory is built only by growing those connections in your neurons, and coating the "wiring"—the axons—with myelin. Why does this matter? Just like most natural growth, growing those connections and coating nerves with myelin takes time and energy. As you grow and strengthen connections in your nervous system, it's good to remember the GIGO principle: Good In = Good Out.

Practicing slowly enough to avoid mistakes is probably the single most difficult thing for beginners to do. It can be a challenge for more seasoned players as well. I'm a long way from a beginner and I *still* have to remind myself to slow down when I practice. How do I know? That's easy. If I'm making any mistakes at all, I'm going too fast.

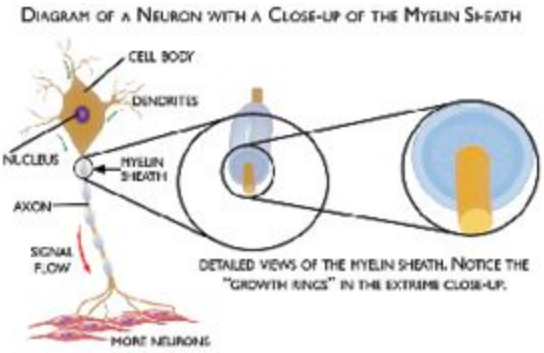
Jazz guitarist Bobby Broom showed me that even a top-notch pro sometimes needs that reminder. Bobby is a wonderful musician and guitarist, and a great guy. He's been the first-call guitarist for jazz grand-master Sonny Rollins for over 20 years. When Bobby spoke with me about practice, he was explaining a lick he'd been trying to learn, but I didn't understand, so Bobby went to get his guitar. He hadn't played yet that day, and jumped right into a fast tempo, so he didn't play the lick cleanly. After a few attempts, he got in a clean lick, but said, "I cheated. I'm going to play that again." Then he slowed *way* down, played the lick flawlessly all

the way up and down the neck, moved up a half step and started again, but stopped, because I understood. It was a cool moment for me.[1]

One reason it's so difficult to practice slowly enough is that slowing down is the *opposite* of our desire: we want to learn something quickly and be able to play it well as soon as possible. Preferably *right now.* That headlong rush sabotages the very real need to go slowly. Understanding just one brain-related process in learning will help explain why going slowly is so important for solid music practice and muscle memory.

Learning anything involves a complex and dynamic interaction of many different systems: biological, social, and contextual. I'd like to introduce you to one biological process of learning that has received some attention recently, the function of *myelin* in the brain. Myelin, also known as "white matter," was first described in 1854 by Rudolph Vicrow.

Myelin is a fatty substance that thinly coats the axons, the slender conduits along which electrical signals pass from neuron to neuron. Myelin insulation coating the axons enables neurons to fire with more efficiency, speed, and precision. Myelin is laid down on axons that receive regular use by cells called Schwann cells, and it's deposited *very* slowly, micron by micron. It's like the growth rings in a tree. And here's the crucial detail: myelin has *no idea* whether you're playing something right or wrong. Myelin simply coats the neurons for whatever behavior it is you're practicing. This allows the neurons responsible for that action to fire with greater speed and efficiency, even if what you're practicing is *wrong*.



If you flub a passage the same place every time and don't take measures in your practice to fix it immediately (or better yet, go slowly

enough to avoid the mistake in the first place), the myelin will blithely coat the neurons, reinforcing the actions that result in the mistake.

Errors come in many flavors, not only the easily detected kinds like flubbed notes—known to musicians as *clams*—but more subtle mistakes, too, like not being in tune, unclear articulations, stylistic inaccuracies, poor tone quality, or problems with any other musical element, like rhythm or timbre. It's kind of an endless list. That's one of the reasons it takes a long time to be able to perceive all of them, or at least most of them.

Expert practicers know this, and avoid making mistakes to begin with by practicing *very* slowly. Expert practicers listen carefully and *immediately* address errors when they crop up. This means not only practicing slowly, but also listening very intensely, what New York Philharmonic trumpeter Ethan Bensdorf calls being an *active listener*.[2]

Trumpet is a notoriously difficult instrument to play, and because it's a prominent voice, not flubbing up is crucial, especially in orchestral music, in which precision is essential. The ability to hear errors is a necessary skill. When Ethan discovers an error in practice, he said he immediately homes in on the error and works at it until it's eliminated, eradicated completely.

In *The Talent Code*, author Daniel Coyle tells a story about The Meadowmount School of Music in upstate New York. It's a summer camp for string players, boasting alumni like Itzhak Perlman, Pinchas Zuckerman, Yo-Yo Ma, and Joshua Bell. A teacher at the camp has a benchmark for slow practice: if someone recognizes the song being practiced, the student is practicing it too fast.[3] World-famous flutist and teacher Julius Baker was talking about the same thing when he said, "You'll never make a mistake if you never make a mistake." Practice slowly enough that a mistake is impossible.

Practicing slowly (combined with active listening) is the first concrete practice technique I've mentioned so far, and I put it here, up towards the front of the book, because it's *so* crucial to quality practice. It's a strategy that anyone and everyone can and should harness, but going very slowly and listening carefully might be more difficult to actually do

than you expect. Going slowly is the strategy, listening carefully and detecting errors is the technique to be developed.

Savor the irony that, although it happens in your skull, myelination is a mindless process. That's why *you* have to be mindful. Practice slowly. Stare with your ears.

EXTENSION

A MYELINATED NERVE, IRL

Check out this colored image of an actual myelinated nerve taken by Steve Gschmeissner with a scanning electron microscope. On the Web: http://bit.ly/1lIMb0s

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[1] Hear jazz guitarist Bobby Broom talk about his practice on the Web at http://is.gd/epequf.

[2] Hear orchestral trumpeter Ethan Bensdorf speak about his practice on the Web at http://is.gd/adobip.

[3] See Coyle's helpful animated explanation of myelin at http://thetalentcode.com/myelin.

Chapter 5
Fail Better

Success is moving from one failure to another with no loss of enthusiasm.

Winston Churchill, statesman (1874-1965)

You overestimate what's easiest to see. It's one of many ways we get reality wrong. Astronomers call it the Malmquist bias. The Malmquist bias is important to understand because knowing about it will help you to fail better in your music practice. Swedish astronomer Gunnar Malmquist had his named attached to this bias (more generally known as *selection* bias) because he observed the bias in faulty conclusions made in identifying the brightness of stars.

A recent example of the Malmquist bias happened when astronomers were trying to understand how many exoplanets exist in our Milky Way galaxy, and what kind of planets they are. As of March 2013, astronomers have discovered 3,538 candidate exoplanets. Early on in the search, as more and more of these distant planets were discovered, most appeared to be huge gas giants, some of them many times larger than Jupiter, our local gas giant, the biggest planet in our solar system.

Because astronomers were finding lots of massive gas-giant planets closely orbiting their parent stars, some reasoned that these massive planets were the most numerous types of exoplanets, and that planets like Earth were significantly more rare. New data pointed out that this conclusion wasn't true, and was in fact an example of the Malmquist bias.

Before 2009, most exoplanet discoveries relied on the *wobble method* to detect distant planets. The gravitational pull of the planet pulls its parent star toward us and away from us as it orbits its star. Detecting and measuring this wobble reveals the existence of the planet. The wobble method is more likely to find massive exoplanets that have a large gravitational effect on their sun's wobble. Because there were many such exoplanets found, the inference that most exoplanets must be massive made sense, even though the conclusion was wrong.

Data from the Kepler satellite helped correct the error. Launched in March 2009, the mission of the Kepler satellite was to find Earth-like exoplanets. The Kepler satellite used the *transit method* to find exoplanets, a more accurate method that can find smaller planets.

The transit method measures the amount of light coming from a star. A regularly recurring dip in a star's luminosity indicates a planet orbiting the star. Measuring how much the light dims allows astronomers to gauge the size of the planet orbiting that distant sun. What this boils down to is that, in fact, there are *many* more planets in our galaxy than we thought. So, how does this relate to failure in music? There's the rub.

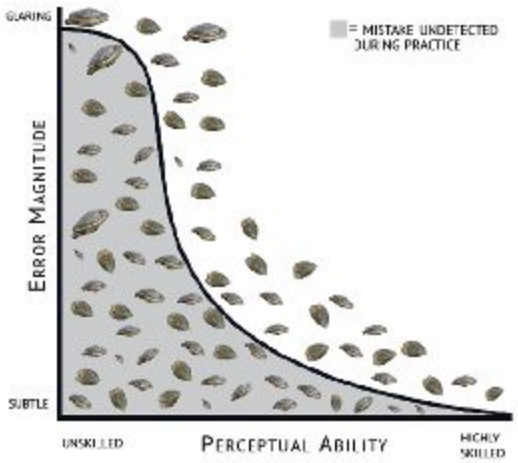
Beginning practicers are like early attempts to find exoplanets using the wobble method. Beginners often can't perceive errors unless they're *big* ones, massive clams that cause the musical endeavor to come crashing to a halt. At this point, beginning practicers usually compound the error by returning to the top of the tune for another attempt, instead of fixing the error immediately, like experts do.

After returning to the beginning of the tune, if they make it all the way through the music without catastrophe, beginners often have a moment of Malmquist bias, concluding they can play the piece. The beginner heard no errors, therefore there were no errors played, and the piece is perfect, or at least good enough. Since astronomy isn't involved, it might be better to call this by its more general name, *selection bias*.

Remember Ethan Bendsdorf's idea last chapter about *active listening*? Beginners often aren't actively listening to what's coming out of their instrument. Beginning musicians usually don't—or *can't*—listen for things like intonation, or timbre, or rhythmic precision, or expression, or other important musical elements. Those kinds of errors are there, but they aren't detected, either because the beginner doesn't have the skills to detect them yet—which is usually the case—or because he or she isn't paying close enough attention.

As we gain more control of our instrument and acquire keener perception of sound and music, we're able to hear more errors. It's like using the Kepler's transit method of exoplanet detection: as we gain musical ability, we're able to hear smaller, subtler errors. For the visual learners out there, I present the completely unscientific *Clam Detection Graph* to help illustrate how a beginner's error-detection system differs

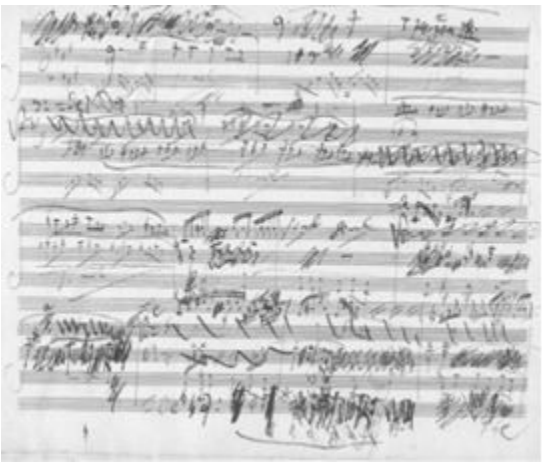
from that of a more competent musician. For musicians, a *clam* is slang for a mistake.



It's a good idea to point out here that you have to be looking for the errors! Beginners often don't do this. It's part of what it means to be an *active listener*. Not listening carefully is a blunder novices make, one that moves way beyond selection bias. I call it the *Ostrich Bias*. The Ostrich Bias says that if you're not looking for something, you won't find it.

There may be a psychological component to the Ostrich Bias, because it can be difficult to point out to ourselves the ways we suck, the ways we're failing, the ways in which we're decidedly *not good*. But that's what good practice is all about: being hyper-aware of where we're failing and addressing those failures in our practice.

Take a look at page eight of Beethoven's manuscript for his 1808 *Sonata for Piano and Violoncello No. 3 in A Major* (Opus 69). Pay attention to the tangled mess of ideas scratched out and abandoned. It's liberating to see evidence of error in the process of one of the world's grand-master musicians.



Without failure somewhere along the way—and the necessary work of practice to address and correct those failures—a successful performance simply isn't possible. The ability to fail is a cornerstone of being human, and probably an essential quality for all life. Blunders are built into our very DNA. Biologist Lewis Thomas reminds us that

> the capacity to blunder slightly is the true marvel of DNA. Without this special attribute, we would still be anaerobic bacteria and there would be no music.[1]

If you search out failures and their causes in your practice, you've turned "failure" into "learning," and in a very real way, you've turned dross into gold. If you're actively listening, and acting on what you hear, to fail is to learn. Jazz trumpeter Ingrid Jensen said, "That's what practice should be about: exposing our tendencies to ourselves so that we can fix them."

Embrace and explore the zone where you begin to fail; flirt with that invisible boundary line between doing something correctly and doing it incorrectly. The goal is to convert the territory of failure into the territory of opportunity. Nuanced awareness of the fine but distinct line between correct and incorrect is one trait that separates veteran musicians from beginners. There are plenty of tools to help you boost your musical awareness, and you'll learn many of them as you make your way through this book.

Here are some important aspects of failure. First, the cause of the failure influences how—or if—you work toward a solution. This is

covered in Chapter 13, *The Blame Game*. Even more important is how failure makes you *feel*. How you feel about failure is closely linked to your theories about intelligence and talent. Your unspoken notions about talent and intelligence *profoundly* affect how you react to failure when it happens (and it *will* happen). In fact, your unspoken beliefs about talent and intelligence also affect your motivation to learn in the first place.

The importance of motivation to get better can't be overstated, because without some kind of motivation, you won't be moved to work on your skills at all. The next section of the book is all about motivation. The very first chapter of the section shows you how your theory of talent shapes your motivation to practice. It's probably the most important chapter in the whole book.

EXTENSION

GLENN GOULD & LEONARD ROSE

Watch and hear two 20th century masters play Beethoven's *Sonata for Piano & Cello* (without the scribbled out mistakes). On the Web: http://bit.ly/1lYLPWJ

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[1]Thomas, 1974, p. 28.

Part Two

Motivation Station

Getting Pumped to Practice

People often say that motivation doesn't last. Well, neither does bathing —that's why we recommend it daily.

Zig Ziglar, motivation guru (1926-2012)

Pick-Up Notes

Without some kind of motivation, practice would never happen. Motivation is a mysterious beast. Describing what drives motivation is a bit like the four blind men describing the elephant. The big picture isn't easy to see. It's even harder to see the things that can suck the motivation right out of you. Learn about some of the powerful sources of motivation in this section.

Chapter 6
Motivation for Mastery

If you are irritated by every rub, how can you be polished?
Rumi, poet (1207-1273)

Your beliefs about talent shape your practice in a fundamental way. Your theories about the nature of musical talent impact not only your motivation to practice, but also how you approach practice and musical learning in the first place. Your notions about music talent even affect how deeply you learn when you work on your music skills.

So what do you think? Is musical talent something you're born with? Is talent something you either have or you don't? Is musical ability genetic, a gift that runs in your blood? Or is musical talent a result of practice? Does talent develop from mere exposure to music? Can you become more talented through effort? Your answers to these questions matter in a big way. The biggest way.

To understand how your beliefs about musical talent influence your motivation and the quality of your practice, we have to back up a little, to 1986, when Harvard psychologist Carol Dweck first published research investigating how our implicit theories about the nature of intelligence impact how we learn.

Carol Dweck first published her groundbreaking research nearly three decades ago, reporting on what she now calls *mindsets*.[1] Dweck identified two kinds of beliefs about intelligence. Some believe intelligence to be fixed, or unvarying in quality. Your IQ is 120 and that's all you get, you don't get any smarter or dumber, your intelligence doesn't vary throughout your life. Others believe intelligence is more fluid, that you can become smarter, that you can grow your intelligence through effort and work and learning.[2] Dweck calls these two ways of thinking "fixed" and "growth" mindsets, respectively. What's astounding is not that people have a fixed or growth mindset about intelligence, but how those notions affect motivation and learning.

Someone with a fixed mindset believes that intelligence is a fixed quantity, like an IQ score. The ego of a person with this definition of intelligence is fundamentally bound up with that definition, because you either *have it*, or you don't; you're smart or you're not. With this fixed mindset, intelligence is a part of you, like the nose on your face. Holding a fixed theory of intelligence tends to lead you to try to demonstrate that you *are* smart, at the same time avoiding any chance that you'll be seen as *not* smart. Believing intelligence is fixed means you tend to seek out easier tasks, ones you *know* you can solve without difficulty, thereby proving to yourself and others that you're smart.

One of the darker facets of a fixed mindset is that it also makes you tend to *avoid* difficult challenges, because the potential for failure is a risk for the ego. Better to play it safe. Those with a fixed mindset tend to learn things in a superficial way, just enough to prove they can do it. That's bad enough, but it gets worse.

When people with a fixed mindset experience failure or even a few difficulties, they often abandon the task because both evidence to them that they're not smart, or not good at the task. This is yet another a blow to the ego, because any kind of failure is taken as a reflection of your fundamental nature. Of course, nobody likes to look stupid, but to a person with a fixed mindset, *looking* stupid is the same thing as *being* stupid. It's a small but absolutely vital distinction.

On the other hand, those with a growth mindset believe that intelligence is something that can be grown. Effort, work, and challenges are what make intelligence grow and flower and bear juicy fruit. People with a growth mindset aren't as attached to demonstrating their intelligence because they know intelligence can be increased, and so intelligence isn't a fundamental, unvarying aspect of their sense of self. Notice I said, "aren't as attached."

We're all sensitive to what others think of us. Nobody likes to look dumb, but if you hold a growth mindset, when you fail or are faced with a difficult challenge, it's not such a blow to the ego. People with a growth mindset understand that failure is a form of assessment telling you that you need to work harder, or approach the problem from a different angle. Failure is an opportunity to learn for someone with a growth mindset, not an example of your fundamental lack of intelligence.

Those with a growth mindset also tend to seek out challenges, they tend to persist in the face of failure, and they adopt deeper learning strategies, because their goal is mastery of the subject, not acquiring the label of “smart” in order to support the ego. So what does this have to do with music, and motivation to practice?

Enter Bret P. Smith, a cellist, music educator, and a researcher who has collaborated with diverse musicians in his career: Alan White (drummer for Yes), John Popper (of Blues Traveler), and progressive heavy-metal band Queensrÿche, among many others. As a researcher, Dr. Smith had the insight to test whether Dweck’s work investigating theories of intelligence might be applied similarly to people’s theories of musical talent.

Smith investigated whether someone’s beliefs about musical talent affect how they practice, including their motivation to practice.[3] He examined the practice approach of people who believed talent to be a fixed quantity—like a genetic gift or innate ability—compared with the practice approach of those who believed musical talent was a trait that could be increased through effort.

Smith collected data from 344 college-aged musicians from 17 different colleges. He adapted Dweck’s research on theories of intelligence to measure participants’ theories of musical ability. He then determined whether someone’s theory of musical ability was correlated with their approach to music practice. Smith found similar conclusions about fixed and growth mindsets where musical ability is concerned.

The more a person believes music ability to be a fixed quantity, the more they tend to have a need to demonstrate they “have it.” People with a fixed idea about musical talent showed even stronger evidence of a need to avoid demonstrating they “didn’t have it.” Those who believe musical talent is fixed tend to take on easier musical tasks and are motivated to practice just enough to show they have talent. Challenging musical opportunities tend to be avoided, because they’re risky. With a fixed mindset, failure implies a lack of talent.

On the other hand, those with a growth mindset of musical ability tend to seek out challenges, persist in the face of setbacks, and seek out feedback. People with a growth mindset of musical ability see effort as the

key to gaining more talent. A diagram is worth 1,000 words. Think about your own motivation to practice as you take in this diagram. It might be hard to see this on an e-reader, but you can get a free, full-color, high-resolution, printable PDF of the graphic at www.ThePracticeOfPractice.com/book-extras.

The human mind is a messy place with few clear distinctions. You probably have a complex mix of both fixed and growth mindsets. I do. Untangling your mindsets can be a challenge. The good news is that you can change the fixed mindsets that you might discover lurking in your own theories about the nature of musical talent.

Change Your Mind

Because you're reading this book, you probably already lean toward a growth mindset of musical ability. But if you do need to make some

changes, realize it will take attention, concentration, and practice to move toward a more growth-oriented belief about musical talent.

For me, learning about the work of Carol Dweck and Bret Smith was like a bolt of lightning, providing a flash of illumination, that allowed me to see my own fixed mindsets. Just knowing about this work did a lot to change my mindset immediately, but the thunder from that flash of light is still rumbling, several years later. I've learned that changing to a more growth-oriented mindset is an ongoing process. Here are a few things that might help:

1) Beware of praise for your talent or ridicule for your lack of talent. Don't buy into the idea that talent is a genetic gift that is fixed and unvarying. Talent is practice in disguise. If you teach, beware of talent-based praise. Even one little phrase is enough to change behaviors (see the Extension at the end of the chapter).
2) When you come up against an obstacle, when things get difficult, carefully examine how it makes you feel, or the ways in which you might avoid the obstacle. What are you actually trying to avoid? Come up with three ways to tackle the challenge. Do them.
3) When you make a mistake during a performance (and I mean *when*, not *if*), how does it make you feel? Take note of the mistake. Put it at the top of your list of things to focus on in your next practice session. Keep performing the music until you get it right.
4) No matter what musical situation you find yourself in, adopt the mindset of the novice: you're there to learn, to take everything in, and to remain open to the experience. "In the beginner's mind there are many possibilities, in the expert's mind there are few."[4]
5) Plumb your musical past to find a scenario in which you were either judged harshly or roundly praised for your musical talent. Feel it fully, whether painful or pleasant. Now adopt a growth mindset. That experience doesn't define your musical

ability. Ask yourself what you can learn from that experience. Move forward.

6) Don't take yourself too seriously. What are you afraid of? It's just music. Focus on that. It's really no big deal, and certainly not life-threatening, unless you're a member of plutonium-rock band *Disaster Area*. Consider what world-renowned flute player Sir James Galway said: "I do not consider myself as having mastered the flute, but I get a real kick out of trying."[5]

Focus on mastering the music as deeply as you can, and worry less—or not at all if it's possible—about impressing others with your musical prowess. That's a losing strategy.

With a growth mindset, your motivation to practice will continue to grow, resulting in a deeper, more enjoyable learning experience that will last a lifetime. Find music you love to hear so much that you want to make it your own. Focus on that love of sound and recreating it for yourself. It's like Josh Ritter sings in his tune *Snow is Gone*: "I'm singing for the love of it, have mercy on the man who sings to be adored."

Extension

The Effect of Praise for Talent

Great breakdown of one of Dr. Dweck's studies. Praise for effort or ability—just one simple phrase—influences how you learn. On the Web: http://bit.ly/1p99GDF

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[1] Dweck, 1986, 2007; Dweck & Leggett, 1988.

[2] I've taken an extreme position for the sake of illustrating the concept. There is clear evidence that one's IQ score is fluid, especially for teens. For a more nuanced look, go to http://is.gd/ameyer.

[3] Smith, 2005.

[4] A saying from Zen Buddhist master D. T. Suzuki.

[5] From Sir Galway's blog: http://is.gd/adaxeb.

Chapter 7
Ass Power

An ass may bray a good while before he shakes the stars down.
George Eliot (Mary Anne Evans), author (1819-1880)

You need ass power. When you know what ass Power is, you'll want it. In fact, to get better, you can't do without it, and the more Ass Power you have, the better. Ass Power is both the easiest and sometimes the hardest thing to bring to your practice. Without it you'll go nowhere. Paradoxically, when you use Ass Power, you'll also go nowhere. No, Ass Power is not an alternative energy plan that involves harnessing donkeys.

Nelson George introduced me to Ass Power when he appeared on *Sound Opinions* with music-critic gurus Greg Kot and Jim DeRogatis on WBEZ in Chicago. Jim and Greg have introduced me to a *lot* of great new pop and indie music while providing informed insight into well-known and lesser-known artists and the popular music industry as a whole. The show often includes interviews with musical artists, producers, and writers about music, like Nelson George.[1]

As a writer, Nelson George is no stranger to Ass Power. He's written several books on music, including *Hip Hop America*; *The Death of Rhythm and Blues*; *Buppies, B-boys, Baps, and Bohos: Notes on Post-soul Black Culture*, and the subject of his Sound Opinions visit, a memoir titled *City Kid: A Writer's Memoir of Ghetto Life and Post-Soul Success*.

Nelson George told a story about an interview he'd done with legendary music producer (and trumpet player) Quincy Jones. Quincy Jones said the reason Michael Jackson was *so* much more successful than another well-known artist also produced by Jones was that Michael Jackson had what Quincy Jones called *Ass Power*. The other musician didn't. It's a quality successful writers, musicians, and other artists know and cultivate. Some have a serious callous on their backside. Ass Power is the ability to sit your butt down in the chair and get to work, and the willpower and commitment to *keep* your butt in the chair to get things done.

Enhance Your Ass Power

More than half the challenge to good practice is just showing up to the practice room. There are a lot of ways to increase what I call your "Ass-Power Index," your ability to keep your butt in the chair, working. Of course, I'm speaking figuratively. Lots of people practice standing up.

All these approaches will help keep you in the chair, thereby increasing your musical ability, even if it's only by a tiny amount, even if the improvement is on an instrument you may never play in public. Those tiny amounts of practice add up. Skills you learn on other instruments will transfer over to your main instrument and contribute to your musical ability in general. Here are just a few suggestions to help you boost your Ass-Power Index.

When in Doubt, Leave It Out

One of the easiest ways I know to help with my own Ass-Power Index is to leave my instruments out and ready to play. For me, this includes leaving my gear set up: pedals, amps, mics, and other electronics. With instruments and equipment ready to go, I can toss off an exercise, a tune, a troubling passage in a piece I'm working on, some free improvising just for kicks (maybe in a difficult key or mode), or simply play and sing a favorite tune as a way to check out for a few minutes.

If I had to take the time to unpack and set everything up, it would happen only rarely. But when all I have to do is plug in and turn on, or simply pick up the horn and blow, practice can happen (and does!) throughout the day, and on evenings or weekends whenever I have a spare moment. It works. Try it.

If You Meet Your Boredom, Kill Your Boredom

Nicholas Barron combatted his boredom by re-tuning his guitar so that he no longer knew how to play it. Re-tuning made the neck sound new and unfamiliar, and allowed Nicholas to explore different shapes and colors and textures. Re-tuning the guitar made his time playing more interesting and resulted in new tunes he wouldn't have otherwise discovered.

Singer-songwriter Erin McKeown decided to take up learning the drum set and worked her way through a book of rhythmic patterns to keep things interesting, and to bring new skills to her music. Jazz trumpeter

Avishai Cohen also adopted a drum set, and puts in time composing at the piano, too. Classical tuba player Rex Martin encourages his tuba students to try just about anything to combat boredom, including the simple trick of changing the lighting in the room. Play by candlelight. Rex has suggested students take off their shoes and socks to play in bare feet as one way to demolish monotony. Take it to the next step and play naked if it will help. Why not? Just don't do it in public.

I like to introduce new technology to my practice to combat boredom and keep my butt in the practice chair. I often use looping pedals during practice, and will toy with programs like Audacity, GarageBand, the *iReal Book*, and Prasad Upasani's superb *iTabla* app to keep me in the practice chair. These tools and more are covered in "Go Go Gadget Practice" on page .

Lower Your Standards

Setting easily achievable goals is probably the best way to enhance your Ass Power, because with a small, specific goal in mind, you'll be more likely to sit down in that chair, even if only for a few minutes. Goals are so important for motivation that a whole chapter is devoted to the topic.

It's after the next chapter.

[1] Jim and Greg's interview with Mr. George is at http://is.gd/oduhoy.

Chapter 8
Go with the Flow

Motivation is temporary. Inspiration is permanent.

Kelly Slater, surfer (b. 1972)

Leo Kottke is both a fingerstyle guitar wizard and a hilarious storyteller. He really gets into his playing. Kottke tells a story about how he used to play with his eyes closed, leaned over to the side, "getting off," as he called it. In one early performance, he opened his eyes to find that he'd drooled all over his 12th fret. Not *had* drooled but *was drooling*, since he was still connected to the guitar by a glistening skein of spittle. During a television interview, Kottke was asked what he thought about when he performed. He said,

> My brain becomes a vacuum up there. That's the nice thing about it. I can completely get away from myself and anything else when I'm playing. It's unfortunate those times when you discover you've gone too far and you can't use your mind to bring yourself back, but when it does work, it's very nice.[1]

Kottke is talking about a *flow state*, a term coined and extensively researched by the influential psychologist with the tongue-busting name of Mihály Csíkszentmihályi (mee-hy cheek-sent-mə-hy-ee). A flow state can be a profound, life-altering experience. It was just such a profound flow state that set my own motivation to practice on fire after I got my first taste of a deep flow state. Csíkszentmihályi said a flow state is

> being completely involved in an activity for its own sake. The ego falls away. Time flies. Every action, movement, and thought follows inevitably from the previous one, like playing jazz. Your whole being is involved, and you're using your skills to the utmost.

In the first deep musical flow state I experienced, time ceased to exist, as did language or concepts, and everything else, including my sense

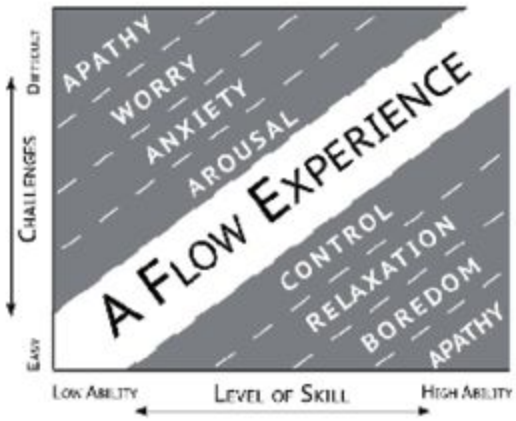
of self. I have no idea what it sounded like, because “I” was somewhere else. There was no “I” involved in the experience. Whatever it sounded like, folks seemed to like it, but that didn’t really matter. The sensation was transcendent in every sense of the word. It was a mystical, deeply spiritual experience; that’s the only way I know to describe it. Well, I guess drool-inducing might be another. Or ecstatic.

It’s no coincidence that the word *ecstatic* is derived from the Greek *ekstatikos*, meaning to stand outside oneself. That first flow experience—and several similar ones since then—are what set me on my quest to better understand practice in general and music education in particular. I wanted to dive deeper into that flow state if I could. The flow state has often been described like a drug, but with none of the annoying side-effects like hangovers, poor health, or incarceration.

You’ve probably experienced a flow state before. It doesn’t have to be music, it could be anything: washing dishes, writing, running, reading, anything, really. The task has to be aligned perfectly with your abilities. More on that in a second. Here’s how the great Leonard Bernstein described a flow state:

> When I know it’s been a really good performance, it’s one in which I have the feeling that I’ve written the piece, standing there, and when it’s over, I don’t know where I’m standing.[2]

Leo Kottke, Leonard Bernstein: these are men of note, if you’ll pardon the pun. You don’t have to be a world-class performer to experience flow, you just have to be in a musical situation in which your ability is closely matched by the challenge. Whatever your level, achieving a flow state is a tricky balancing act. Consider the following diagram.[3]



The sweet spot—known as a "flow channel"—happens when your abilities are perfectly matched with the challenges of the task. The better your skills become, the more challenging the task needs to be for you to enter the flow state. The dotted lines indicate that boundaries are not fixed, but fluid. Other emotions surround that flow state.

Regardless of education, culture, or the task, there are seven basic traits people describe when they're in a flow state:

1) You're completely involved in the task, focused and concentrating.
2) You feel a sense of ecstasy, or being outside everyday reality.
3) Inner clarity: you know what you need to do and how well you're doing it.
4) Knowing that your skills are perfect for the task.
5) A sense of serenity, and a feeling of expanding beyond the boundaries of the self.
6) Timelessness. Completely focused on the present. Hours slip past effortlessly.
7) Intrinsic motivation. The activity producing the flow state becomes its own reward.

Flow doesn't happen in practice, or at least not usually. Flow is actually the antithesis of good practice. Conscious attention to detail is *essential* for practice, and that's not possible in the flow state.

The zone just above the flow state is where practice and improvement happens, in the “arousal” and maybe a little into the “anxiety” zones. The arousal state happens when the challenge you face pushes your abilities to the edge of failure. You’re concentrating fiercely, but you’re still getting it done, with few or no mistakes. When you stray into the “anxiety” zone, you’re probably pushing it a little too hard. You want to be relaxed when you play, and practicing while worried or anxious won’t help you achieve that relaxation.

When you begin to get frustrated or angry or you’re making lots of mistakes, you’ve drifted into the zones where the challenge is more difficult than your skills can handle.

Of course, none of these states are fixed, shown by the dashed lines. As I go through a practice session on trumpet, I get more and more tired, and towards the end of a long session, I’m physically incapable of something I could have easily played two hours earlier. The dynamic dance between ability and challenge is just one reason why it’s a good idea to “check in” on your emotional state as you practice.

Stephane Wrembel, a virtuoso guitarist who has composed and played music for two Woody Allen films, told me, “Practice and playing music has to be like a religious experience. It has to be your religion, you know; it has to be your trance. You get something from a devotion to it and digging deeper into yourself and the nature of reality. ”

Achieving a flow state is a powerful motivator to continue to put in the practice time. Getting better is a self-perpetuating cycle. Rex Martin described it by saying, it’s

> like a drug. You just keep getting rewarded. You know, the more you practice, the better you get and the better you get the better you feel and the better you feel the more you want to keep doing it and it just keeps going.

You don’t have to be a master musician to experience a musical flow state. One of the ways I like to visit the flow state in a practice session is simple enough that even a beginner can do it. The strategy is covered in Chapter 31, “Drone Power,” in the last section of the book. If you’re curious, check it out now.

Even though good practice is the opposite of flow, I like to begin and end a practice session by visiting this flow state if I can, even if only briefly, because it's a pleasant place to be and fuels my motivation to continue to improve. Drummer Allison Miller said "My goal every time I perform is to lose myself, to lose my ego and let the music just take me wherever it goes." She said, sometimes she'll go into a practice session with no other goal than that: to lose herself in the music. She said, "It's definitely what keeps me wanting to play." Every now and then, the best practice is play.

Extensions

Leo Kottke's Drool Story

Hear Kottke's guitar and storytelling skills in a clip from his documentary, *Home and Away*. On the Web: http://bit.ly/1i02wN2 (5:01)

Dr. Csíkszentmihályi on Flow

Dr. Csíkszentmihályi explains why flow is important to musicians and artists, and how to achieve it. On the Web: http://bit.ly/1o1T2bv

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[1] From a 1983 interview: http://is.gd/gacepa.

[2] *Here's the Thing* podcast, 12/24/12. On the Web: http://bit.ly/1p9bL2z.

[3] Synthesis of Csíkszentmihályi, 1995 & 1997.

Chapter 9
Goals & Goldilocks

By the Yard—Life is hard. By the Inch—Life's a cinch.[1]
Edward Kleinhammer, bass trombonist (1919-2013)

The *Goldilocks Zone* is a place where everything is just right. Astronomers borrowed the fairy tale trope in the 1970s to describe the zone around a sun in which water can be found in its liquid state, a requirement for life as we know it. Not too hot, not too cold, but just right. There might even be a galactic Goldilocks Zone. The Goldilocks Zone can be a useful way to think about your goals, too. Setting your goals "just right" will do wonders for your motivation, because setting the appropriate goal means success. Nothing motivates like success.

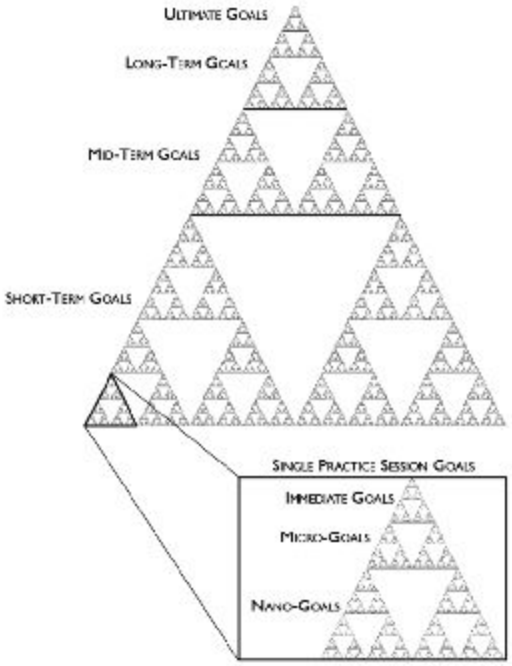
Setting goals "just right" is one of the most powerful and motivating techniques expert practicers use to get the most out of the practice session, even if you only have two minutes of practice time a day, like the cello player you'll learn about later in the book. I'd like to introduce you to her teacher, Hans Jørgen Jensen.

Mr. Jensen is a top-notch cello teacher whose students win prizes in international competitions and earn spots in professional orchestras around the world. When I asked him if there was one thing he would teach his younger self about practice, he said, "I would try to make my goals more specific: short-term, long-term, and having a big vision of where you're heading with it." He teaches his students to set clearly defined, concrete goals. He said, "If there is no dream, and if there is no vision; *that's* what we need for having motivation."

Goals come in many shapes and sizes. They're like fractals. At the largest scale, there is a pattern, and as you dive in and look more and more closely at goals, they reflect that larger pattern, even at the microscopic level.

We know about long- and short-term goals. But goals can be even smaller, especially if you look at a single practice session, which is the focus for this chapter. I've called these smaller goals immediate-, micro-,

and nano-goals. Here's a graphic to help show how goals are related. It's a kind of fractal called a S*ierpinski Triangle*, named after the Polish mathematician who first described the pattern in 1915.



Ultimate goals are your fantasies and are waaaay outside the Goldilocks Zone. Ultimate goals are broad, overarching goals that may take a lifetime to achieve, if they're ever achieved at all. Ultimate goals are your dreams: play Carnegie Hall, play with your musical idols, land a spot in a major symphony, play to a screaming crowd at Lollapalooza, or create a chart-topping piece of music, whether it's a song, a soundtrack, or a symphony.

Ultimate goals are important, and they're not only worth thinking about, they're a lot of fun to imagine. Ultimate goals provide inspiration and motivation, but achieving them is often *so* far in the future that it's difficult to know exactly what you've got to do to reach them, other than "be awesome," or "practice your butt off." And here's the thing about goals: the closer you get to the present moment, the more concrete the goals become, and the easier it is to know *exactly* what you have to do to make them happen.

Long-term goals are still pretty broad, maybe two to five years away. If you're in high school, you might have a long-term goal of getting into a

particular college, or doing a three-state tour with your band in the summer after you graduate. If you're in college, a long-term goal might be to land a symphony job, or do a national tour with your band, or record an album of original tunes (and then do the tour). If you're older, or are just starting out, a long-term goal might be simply to be able to play a few tunes and sing around the campfire. Again, these goals are so far away that specific tasks you need to do to achieve them are too numerous to wrap your head around.

Mid-term goals are often a few months or a year out: play a show on your own or with a band; bring a new tune you wrote to an open mic and nail it; get a piece ready for a solo or ensemble festival; perform a recital; record a piece for an audition tape; or something similar. Now we're getting closer to the Goldilocks Zone, because now you can wrap your mind around these goals, and it's clearer what you need to do to accomplish them. We're still not in the sweet spot though; we're still too far from the sun and it's a little frigid out there for life to flourish, so let's move closer.

In the Sierpinski Triangle, notice that as you get closer to the present moment, the size of the goal diminishes and the goals multiply like rabbits on Viagra. This makes sense if you consider how many short-term goals it takes to reach an ultimate goal. Short-term goals are things you want to do in the near future, say a week away: play an orchestral excerpt for your peers; cover a tune for open mic; write a song, learn the D^b scale, memorize the A section of a tune, learn three chords on the guitar, or whatever.

Your course of action should be easier to see at this level of goals. Now you can wrap your mind around what you need to do for a single practice session. You still have goals to deal with, but they're smaller and more easily imagined. Now we're down to goals for the single practice session: immediate goals, micro-goals, and nano-goals. Some concrete examples of setting these goals will probably be more interesting and helpful at this point.

When I arrived in Chicago to continue my education, my long-term goal was to find or create a Gypsy jazz-style combo and play gigs for fun and profit. A modest mid-term goal was to get my rhythm guitar chops

together, and get enough schooling behind me so I could spare the time to practice on my own and in group rehearsals.

It took longer than I had hoped, nearly four years, but as I waited, I continued to practice and to pursue other performance opportunities, so I was still in the game. Finally, I got a Gypsy jazz group together that became *Swang*. Long-term goal, check.

After *Swang* had been going steady for a while, a mid-term goal I had was to perform *Troublant Bolero*, one of my favorite Django Reinhardt tunes, first recorded in 1948. I gave myself a month to learn the tune before rehearsing it with *Swang*. Mid-term goals, check.

Now we're down to the level of short-term and micro-goals. As you can see in the image of the Sierpinski fractal, short-term and micro-goals multiply quickly, and there can be hundreds of nano-goals in a single practice session. Focusing on small parts of the goal is the key. My short-term goal was to learn the A section of *Troublant Bolero*. Here's how the first practice session looked.

My immediate goals for that first session were to play the bolero strum pattern and get two or three chords under my fingers. Two immediate goals might be one goal too many, but I knew I could kill two birds with one stone by doubling up: focusing on both getting the chord fingerings down and playing those chords with the bolero strum pattern. Doing double duty like this is something you should always be looking for. Pros do it all the time because it's efficient. Immediate goal, check.

My first micro-goal was to play the bolero strum pattern with my right hand. The strum pattern for a bolero is written like this:

The second micro-goal—for my other hand—was to move between the first two chords in *Troublant Bolero*: $E^{6/9}$ and $Emin^{7}$, chord fingerings that were awkward and unfamiliar to me at first. My nano-goal was moving from the first chord to the second. Period. No rhythm. Then, after several slow repetitions (each repetition a nano-goal in itself), once my fingers were familiar with the movement, I added the bolero rhythm strum pattern with my right hand, slow enough to get it right and stay relaxed. At

first it was so slow it was unrecognizable. Each repetition was a nano-goal. Once I could play the two chords with the bolero rhythm solidly, I moved on to the next chord.

The next micro-goal was to move from that second chord (Emin^{7}) to the third chord (A^{13}), an even more awkward chord for me. You can see there are many possible immediate goals for a practice session, and each of those is made up of numerous micro-goals, which are in turn made of nano-goals, or one repetition, successfully performed. And so, chord by chord, nano-goal by nano-goal, over several days, my ability to play *Troublant Bolero* increased. Patience is a virtue.

This process is so familiar to me that I do it without thinking much. If you're new to setting practice goals like this, consider keeping a practice journal to record your goals and your progress. Goals are in a near-constant state of revision, especially the shorter-term goals, because as you come up against the reality of learning something, you have to adapt to adjust to that reality.

Motivational guru Zig Ziglar said, "A goal properly set is halfway reached." Correctly setting goals takes some tinkering before you can dial it in. If you're just starting out, it's best to set easily achieved goals at first, until you have the experience to know when to push yourself a little harder. When you practice, seek out the boundaries of your Goldilocks Zone: too hard and you burn with frustration; too cold and you freeze with boredom. Anticipate the difficult by managing the easy. Set goals with this in mind and everything will be "just right."

Extensions

Trip Through a Sierpinski Fractal

A video of a 3D trip through a Sierpinski fractal. Soundtrack: Tchaikovsky's *Swan Lake*. On the Web: http://bit.ly/R3ZYGI

Troublant Bolero

Guitar wizard Joscho Stephane plays *Troublant Bolero*, in 2010. An ultimate goal I'll never reach is to play guitar with Joscho's ease. On the Web: http://bit.ly/1j598to

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[1] Yeo, 2014, p. 25.

Chapter 10
Silence Is Golden

The shortest answer is doing the thing.
English proverb

CD Baby changed the music industry. The brainchild of entrepreneur, musician, and professional clown, Derek Sivers, CD Baby allowed independent musicians to connect directly with their fans in order to sell their music, cutting out middle men and record companies, funneling more money to the creators. As of May 2013, over 300,000 artists have sold their music on the site, and over $250 million has been paid directly to artists since the service began in 1998. Ten years after he started CD Baby, Sivers sold it for $22 million. But here's the kicker: Mr. Sivers gave that money to a charitable trust that supports music education. How awesome is that? If you're an independent musician looking to sell your music, CD Baby might be a good fit for you.

Derek Sivers gave a talk that introduced me to research examining how your large and luscious brain can sabotage your motivation to practice.[1] Imagine the following scenario: You're stoked to learn the guitar, you've bought some books and have considered taking lessons but haven't taken that step yet because you want to see what you can learn on your own. You've got YouTube, you're smart, you can figure it out; it's not rocket science. And you're right about all of that.

Your long-term goal is simply to learn one or two simple Beatles tunes to sing around the campfire next summer. Maybe *Yellow Submarine*, or *Rocky Raccoon*, or *Norwegian Wood*. You tell your family, your friends, your colleagues, and they tell you it's a *great* idea and they all give you heaps of praise. Feels good. It should be a piece of cake.

And then nothing happens.

You never fully follow through with the plan. You give up after just a few weeks of practice. You really wanted to play guitar and everyone

supports your quest and gives you praise and encouragement, but nothing comes of it. Why?

It might seem like common sense to state our goals publicly, because it feels like this will reinforce our pursuit of making music. If you let others know you're going to learn to play a song on guitar, you'll then be obligated to deliver on what you said you were going to do, right? Not necessarily, according to research by Peter Gollwitzer, a research psychologist at NYU. Stating your goals publicly can actually sabotage your progress, making it harder to achieve your goal.

One of the reasons this advance praise is fulfilling appears to be rooted in the way our mind works, especially where our self-identity is concerned. We gush about our goals to others, they praise us for them, and this feels good. The reason the praise feels good is that it's fulfilling our desire to be identified as a musician, or whatever new self-identity it is that we're trying to put into the world. Our imagination is so good that it hamstrings us before we even get to the starting line. Our imaginative brain takes that praise in, and then fools us into believing we've already done what we said we were going to do, giving us "a premature sense of possessing the aspired-to identity."[2]

As suggestive as this research is, it's not a good idea to let go of your skepticism about the conclusions. We should all remember that a few studies, done on a special population (law students in Gollwitzer's work), only hint at what might be actually happening when you state your goals publicly. It will take a lot of work and many more studies to understand how stating your goals publicly affects your follow-through.

Plenty of well-respected people believe that stating goals publicly is a great thing to do because it holds you accountable to the group at large. But they all caution that the goals you state publicly should be clearly *actionable* goals. For example, saying, "I'm going to play *Yellow Submarine* at the open mic in one month" is a concrete goal you can act on. "I will play the guitar and sing" is vague and unfocused. If you're going to share you goals, choose specific, easily measured goals.

If you must crow about your goals, pay close attention to how receiving praise makes you feel. Even better, instead of merely stating your goals, create some sort of public means of holding yourself

accountable and tracking your progress. It could be as simple as asking your friends and family to kick your butt if you start to fall short or start slacking off. With a little more effort, you could write blog posts detailing your efforts. Best of all would be to visit www.GiveIt100.com. On the site, you set a goal you think you can achieve in 100 days (the more specific the better). Then you post 10-second video clips chronicling your progress. One page on the site is dedicated to musicians learning new skills. It's almost always better to do something with other people. Check it out!

Having goals is essential to good progress, but stating those goals in public is not. Though the superiority of silence has been studied recently by researchers, we've known about its power for a long, long time. Chinese philosopher Lao Tzu lived over 2,400 years ago. He said, "Silence is a source of great strength."

Extension

Derek Sivers: Keep Goals Private

A three-minute talk Mr. Sivers gave presenting his interpretation of research on stating goals publicly. On the Web: http://bit.ly/1hZWCvw

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[1] Brunstein & Gollwitzer (1996); Gollwitzer (1986); Gollwitzer, Sheeran, Michalski, & Seifert (2009); Locke & Latham (2002).

[2] Gollwitzer et al. (2009), p. 612.

Part Three

The Who

Self and Others in Practice

The struggle is not with the instrument; the struggle is with yourself.

Vince Cichowicz, trumpeter & teacher (1927-2006)

Pick-Up Notes

The first "who" in this section is—as Ray Charles sang— *Nobody but you*. Even the way your brain is wired affects your practice.

Other people influence your practice, too. Relationships with teachers, parents, friends, enemies, frenemies, and strangers will all have an impact on your practice (especially frenemies).

Chapter 11
Monkey See, Monkey Do

Art begins in imitation and ends in innovation.
Mason Cooley, aphorist (1927-2002)

Chicago's Green Mill has an impeccable Jazz-Age pedigree. During Prohibition (1920-1933), booze was smuggled into the bar through underground tunnels. Legendary mobster Al Capone had a reserved table in the joint. Throughout the Green Mill's checkered history, you could hear great jazz from legendary players in its dim interior.

It's a safer place now, but the jazz is still top-notch. Pretend for a moment that you're a budding jazz guitar player living in Chicago. You've been practicing steadily for a couple years, so you're beginning to get a grip on how to play the guitar. Because you're lucky enough to live in Chicago, you head up to the Green Mill to catch jazz guitarist Bobby Broom playing with his trio.

You get off the Lawrence stop on the Red Line and walk away from Lake Michigan for a half block toward the flashing green sign. Inside, the Green Mill is dim and intimate. At the door, a husky guy wearing a leather vest and a conspicuous bear-tooth necklace takes your money while telling you in no uncertain terms that there will be NO talking while the musicians play. The Mill's gangster history makes it easy to believe that the consequences for talking during the gig will be dire.

You find a seat in the dim interior with a good view of the stage just as Bobby Broom on guitar, Dennis Carrol on upright bass, and Kobie Watkins on drums sit down to play. Their first tune is one you've just started to learn, is the jazz standard *You and the Night and the Music*.[1]

Now your imagination has to kick into high gear because you have to imagine that you have a portable fMRI attached to your head. Got it? Among many other uses, an fMRI is able to map blood flow in the brain, revealing what parts of the brain are activated when you think or do things. Scientists and medical doctors have used the device to discover all sorts of interesting and useful things about the brain and how it works. The fMRI

has also been used to examine the brains of improvising musicians to see what an improvising brain looks like. I'll tell you more about that fascinating study later in the book.

So, imaginary fMRI firmly in place around your head, the Bobby Broom Trio launches into *You and the Night and the Music*, the tune you've been working on for a week or two. Bobby, Dennis, and Kobie lay down a killer arrangement. It's easy to hear why Bobby Broom has been a first-call guitarist for tenor sax legend Sonny Rollins over the past couple of decades. As you listen, your fMRI readings are showing information that is nothing short of astounding. Your imaginary fMRI analyst is standing by to interpret your readings.

As you soak up the great sounds, studying Bobby's fingers intently, your fMRI readout reveals that your brain is firing a subset of the *exact same* neurons necessary to play what you're seeing and hearing Bobby play! In essence, your brain is doing something *very* similar to what Bobby Broom's brain is doing up on stage. About 20% of your neurons will fire when watching—but not doing—a task you're familiar with.[2] I'm convinced that sending impulses down those connections, even if it's at 20%, is *still* a form of practice. Turns out I'm not alone.

Nearly every musician I've interviewed—including Bobby Broom—believes that listening to musicians and watching musicians perform are both forms of music practice. Biographies of musicians all relate stories about the importance of live music to their own development. The fact that mirror neurons are activated when you hear and see a performance only reinforces why hearing live music is such a great idea. What kind of practice could be more enjoyable than kicking back and watching master musicians perform? I can't think of any.

Almost 20 years ago, scientists discovered the mirror neuron system. It's one of the ways primates like us learn how to do things: by watching. Isaasc Asimov perfectly describes how mirror neurons were discovered. Asimov said, "The most exciting phrase to hear in science, the one that heralds new discoveries, is not *Eureka!*, but, *That's funny...*"

In a lab run by Giacomo Rizzolatti, a leading neurophysiologist, researchers were studying monkeys' brains by examining which sections of the brain were active when the monkeys picked up a peanut. When one

of the monkeys was taking a smoke break between measurements, just lounging around but still wired up, someone in the lab picked up one of the peanuts. The monkey watched. To everyone's astonishment, the sensors attached to the monkey showed her brain lighting up in the same area when she merely watched the researcher pick up the peanut.

After a great deal of research exploring this phenomenon, neuroscientists now know mirror neurons are real neural systems at work in primates. But the kicker is that we humans have an additional system beyond those of other primates. Rizzolatti said,

> In humans we have another mirror mechanism which is able to code not only the goal, but *how* the goal has been done, and that's very fundamental for imitation.[3]

Growing up on an island in Alaska didn't provide me with many opportunities for either live music or the kind of teachers available in a bigger city. The Internet didn't exist. YouTube creators Hurley, Chen, and Karim were all in elementary school, so easily watching video of musicians making music wasn't an option. I listened a lot, but the sounds coming through my headphones were abstracted, because they weren't connected visually to the warm bodies who made them. It wasn't until later, when I was fortunate enough to see world-class music being made right in front of me, that music became more "real" in a way that's difficult to describe. Somehow, seeing a great musical performance (or even a bad one) happen right in front of me made the music more *real*, more achievable, and this is a profound psychological difference. It's my guess that this *realness* I experienced is what it feels like when mirror neurons are firing.

UCLA psychiatry professor Marco Iacoboni and others have found evidence that mirror neurons send information to the limbic system of our brains, the region responsible for emotion, behavior, motivation, and long-term memory, among other things. Music and emotion share deep links: the better the music, the more feeling it tends to evoke in the listener. And as for motivation, behavior, and long-term memory, it's pretty obvious how important those are to music practice.

There is no conclusive research yet that connects the mirror neurons system to learning music, but it's a good bet that link is there. One piece of evidence is the vast importance accomplished musicians give to listening to music and to seeing live performances. Listening and watching great live music is motivating, it helps with memory if you're familiar with the music, and there is often an emotional connection to the sounds. These are just more great reasons to go hear live music! There is an even better source for getting some of that all-important monkey-see-monkey-do action.

Top Modeling

There are a number of music studies showing that having a good model is crucial to deep learning.[4] Sometimes a model can be simply listening to a great performer, but to really squeeze the most juice out of a musical experience, it's best to *see* the performance unfolding in front of our very eyes, with no digital devices between us and the performance. There are nuances of a live performance that no digital device will ever be able to capture.

This is just one reason why having a teacher you admire is so crucial, because when you learn from a great teacher, you often get to play along. Bobby Broom said his first teacher, jazz guitarist Jimmy Carter, was a great model who inspired him to practice. Bobby laughed as he said, "I just wanted to be good enough to play the chords behind him the following week, because I wanted to hear him play."

One of the most important ways good teachers influence you is that they model good playing: what it looks like, what it sounds like, and what it *feels* like. Rex Martin said, "If I model for them, they hear it, they can do it, and there's no discussion."

When we watch and listen to a good example, the neurons in our own brain light up in a surprisingly similar way, and this contributes to our own learning. It's as if that person takes the flame they received and uses it to light our own candle.

Extension

Dr. Ramachandran on Mirror Neurons

Neuroscientist Vilayunar Ramachandran talks mirror neurons and their role in learning. On the Web: http://bit.ly/1qS21hJ

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[1] Hear the Bobby Broom Trio play at http://is.gd/ulevuc. Bobby's interview about practice is at http://is.gd/epequf.

[2] Mirror neurons from the good people at Nova: http://to.pbs.org/1o23LTv.

[3] Rizzolatti speaks about mirror neurons at http://is.gd/kelewe.

[4] E.g., Dickey, 1992; Henley, 2001; Hewitt, 2001; Theiler & Lipman, 1995; Zurcher, 1975.

Chapter
The Blame Game

You can fail many times, but you aren't a failure until you begin to blame somebody else.
John Burroughs, naturalist (1837-1921)

Two capuchin monkeys are caged next to each other, and each has a small stone in the cage with them. The little monkeys are eager to give the stone to Sarah Brosnan, because when they do, they get a treat. Brosnan is a behavioral scientist conducting an experiment to test whether capuchin monkeys have a sense of fairness. When each monkey gives Brosnan a stone, the monkey gets a piece of cucumber. No problem. That's fair, and fun, even if the reward is only a boring piece of cucumber.

Then the game becomes unfair and not so much fun for one of the monkeys. One lucky monkey gets a juicy grape in exchange for her stone—a treat all primates know is *much* better than cucumber—while the other monkey still gets the boring old cucumber for his stone. The cucumber monkey immediately gets agitated, hurls the cucumber at the researcher in frustration, and starts yanking on his cage in what looks a whole lot like a temper tantrum. You feel sorry for the little primate, and you can relate to his frustration, but it's adorably hilarious.

This groundbreaking study of fairness was done in 2003 by Frans de Waal and Sarah Brosnan, and it's been replicated many times, not only with primates, but also with birds, dogs, and other animals. A sense of what's fair and what's not runs deep in socially minded creatures.

When things don't go our way, we can't help but look for the source of the failure. Finding the source of the failure is a crucial piece of information if you want to figure out how to fix what went wrong, so you don't repeat the mistake.

There are other factors in addition to fairness that we tend to call upon when we seek to understand why something doesn't work out. Psychologists call it Attribution Theory. Attribution Theory isn't one cohesive theory, but is a number of different theories that help psychologists understand some of the reasons why we do what we do, and

how we assign responsibility for what happens. Bernard Weiner's contribution to the field is a theory that helps explain how people account for their successes and failures. Weiner identified three things people tend to perceive regarding the success or failure of some action. They are the *location* of the cause (either external or internal); the *stability* of the cause (constant, variable, or neutral); and whether the cause can be *controlled*.

For the frustrated monkey, the *location* of the cause of his failure to get a grape was external, residing in the researcher; the *stability* of the cause was changing because at first both monkeys got the same treat when they gave up their stone, but then for some reason the monkey doesn't understand, the other one got a grape while he still got a bland cucumber; the cause was unstable. The *control* aspect is where the frustration really boils over, because the poor little monkey has absolutely no control over the situation. The fact that we can all relate to that sort of frustration is partly why it's so funny to see that familiar human emotion in another primate.

The coolest thing about Attribution Theory is that it may not matter what the "true" nature of the cause is. It's your *perception* of these three aspects—location (internal or external), stability (stable, unstable, or neutral), and control—that shapes how you tackle the problems. Master musicians tend to approach each of these three aspects of Attribution Theory in their practice in similar ways, an approach that drives continuous improvement. Thinking about the reasons why failure happens has a fundamental impact on your practice, so let's tackle each aspect of Attribution Theory in turn.

Location: Internal or External

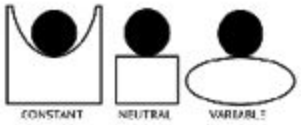
A cause for failure is perceived to be either internal or external. The other day during my trumpet practice, I was working through some fast scales and arpeggios over dominant seventh chords, and my third valve

kept getting stuck—not frequently, but even once is too often. I eventually got frustrated, stopped, and oiled the valve. On the surface, the cause of that failure was external: the valve was sticking. Not my fault.

But here's the kicker: most people who become great at what they do tend to *always* see the cause of a failure as internal; they tend to take responsibility for *any* error that occurs. The fault of my sticky valve wasn't externally located in my valve at all. The valve was sticking because I hadn't oiled my valves for several days. The sticky valve was *my* fault. The cause of the failure was internal, not external.

If you perceive the cause of a failure as external, there's little you can do to fix it. If you perceive the cause for failures as internal, and therefore as your own responsibility, you can probably do something about it. I say "probably" because it depends on the stability of the cause.

STABILITY



If the cause of a success or failure changes over time, it's unstable; if the cause remains the same over time, it's a stable cause. And some causes are neutral, neither stable or unstable. For my sticky trumpet valve, the cause is relatively unstable: over time, there is less oil on the valve, gunk begins to build up on the valve, and it becomes more likely to stick. You can usually do something about unstable causes. A sticky valve is fixed by oiling it. If that fails, you clean the valve and oil it, which is what I had to do with my valve. However, if there had been a large scratch on my valve, that would have been a more stable cause making the valve stick. To fix that cause, I would have to replace the valve completely.

Do you recall the impact your mindset about musical talent has on your motivation and your learning? If you think talent is fixed—something you either have or you don't— you won't be motivated to change it. If you see talent as something that's unstable—something that can be grown—you'll use deeper learning strategies, will be more likely to pursue challenges, you'll persist, and you'll get better. It's the same principle. But whether a cause is constant, neutral, or variable, you still

may not be able to change it. That's where control comes in. Control is the last part of Attribution Theory.

Control

Let's stick with the stuck-valve example I've used so far, but this time, the valve sticks during an important performance. As an oh-so-green high-schooler in 9th grade, I participated in a regional honor band. Due to my lack of experience, I didn't oil my valves before the concert and neglected to take valve oil on stage with me. My second valve froze. Totally stuck in the down position. An important trumpet passage was just a few measures away. The location of the cause was internal because it was totally my fault, the cause was unstable because it could be fixed with just a drop or two of oil, but the control? It seemed completely out of my control because nobody near me had valve oil either, and even if there had been time to ask anyone, the disruption mid-concert was a bad idea. Frantic desperation forced me to think quickly. I unscrewed the valve cap, somehow conjured saliva from my nervously dry mouth, spit on the valve, put it back in, and made my entrance. Whew.

Successful people in all fields tend to see otherwise arbitrary external causes of failure as controllable. This means successful people tend to believe the cause for the failure *can* be fixed or improved through effort, even if it seems impossible. This makes a lot of sense, of course, because if you believe a particular failure is outside your control, why bother? However, if you believe that particular failure *is* within your ability to control, you attack it until it goes away.

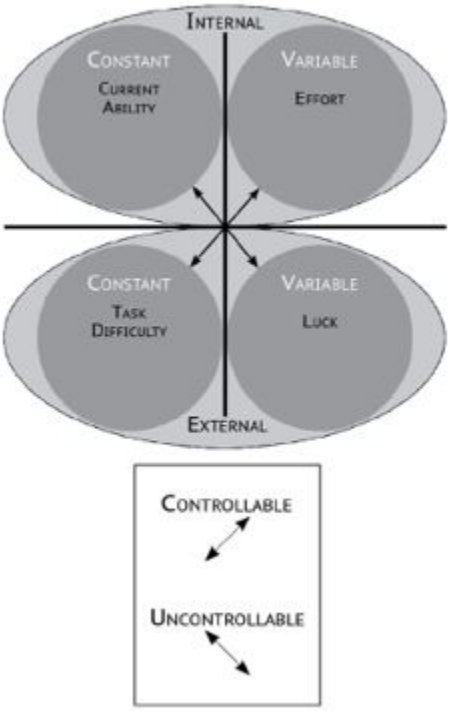
For the sake of illustrating this aspect of Attribution Theory, let's use the same example, someone who believes that natural musical talent is a "thing," and sadly, this person has concluded they don't possess "natural" talent. The cause is internal (they don't possess talent), the cause is stable

(it's something you have or you don't), and the cause is totally outside their control (nobody can change their genetic makeup). Their chances of persisting at music are slim at best.

On the other hand, if you believe that talent is something that can be grown, the cause of your failure is still internal, because "talent" is still something that you either have or you don't. However, if you believe talent can be increased, the cause of not having talent is unstable. Through effort, you can grow your store of talent. Finally, you know that you yourself have control over growing your stores of talent. Making the necessary change to get better *is* under your control.

Improvement comes about because of the way you think about the challenges facing you. Sure, you'll make mistakes. Everybody does. The difference is how we attribute the causes of those mistakes, and this affects whether we do something about them or give up without trying. Woody Allen said, "I still screw up a lot of the time.... The only thing standing between greatness and me, is me. You know, there is no excuse."

The following diagram may help you to think about Attribution Theory a bit more clearly. Location is represented by the lighter ovals on the x axis (external or internal). Stability is represented by darker circles on the y axis (constant and variable). But what about control? Which aspects can you control, and which are outside your control? Try to find them in the diagram below.



The control of these causes is shown by the two diagonal arrows. Things you can control are effort and task difficulty. If things are going badly, you can try harder or choose an easier task. Aspects you can't control are your current ability and luck.

Over time, you *do* have some control over current ability, because if you're practicing, your ability will be slowly but steadily improving, but in any given moment, your ability is fixed. As for luck, that will always be outside your control. You can make luck more likely. My college trumpet teacher George Recker used to tell us, "Opportunity strikes those who are prepared for it." You can't control luck, but you can make your best efforts to place yourself into Lady Luck's path, and every now and then she might give you a kiss on her way past.

The most astounding thing about Attribution Theory is the role your perspective plays. If you think the cause of your problems is unchanging and outside your control, unless you're *very* lucky *very* often, how will you *ever* change *anything*? Answer: you won't! But if you perceive failures as your own responsibility and believe you can do something about them (like practice), then you will. Whether it's an epic disaster or a miniscule mistake, with the right perspective, failure is a learning opportunity in disguise.

Extension

Frans de Waal: Morality in Mammals

The fairness bit with the capuchin monkeys is funniest and begins at 12:30. On the Web: http://bit.ly/1sPzq8u

Chapter 13
Parental Units

A strong conviction that something must be done is the parent of many bad measures.

Daniel Webster, statesman (1782-1852)

When Sidiki Dembele wanted to practice his djembe, he had to walk several miles away from his home in Abidjan, Cote d'Ivoire in western Africa. If he didn't, he would be in serious trouble. Sidiki's school teacher had been given permission to beat him if Sidiki was discovered playing the djembe. He never got caught.

The djembe is a drum created by the West African Malinke people and has been used by Griots for over 1,500 years. The drum is carved into an hourglass shape from a solid piece of wood and has a drumhead of thin goat skin. In the hands of a master like Sidiki Dembele the djembe produces incredibly rich and varied tones.

Sidiki's father had forbidden him to play music, even though he was from a Griot family, the caste of travelling performers who brought news, folklore, ceremony, and diplomacy throughout West Africa for centuries using music and dance. Sidiki's father was so opposed to Sidiki playing music that he gave Sidiki's teacher permission to beat him if Sidiki was ever caught playing the drum.

The threat didn't stop him from practicing, and he never got caught. Sidiki practiced in secret, honing his musical skills (he also plays dunun, kora, and other instruments). Sidiki mastered the djembe, eventually earning his father's respect and approval. Sidiki even started a school devoted to providing young people training and experience playing music as an alternative to drugs, violence, and a life on the street. Sidiki's diligence also earned him a position as the lead drummer in the phenomenal ballet *Afrika! Afrika!*, allowing him to tour and perform throughout Europe.

Most musicians have parents who support their musical pursuits. Some sacrifice time, money, and no small amount of peace and quiet to help their children become successful musicians. Parents often do

everything in their power to help out: paying for lessons and instruments, driving to lessons and performances, paying for concerts, trips, and even college. Virtuoso reed-man and Grammy winner Paquito D' Rivera received his first saxophone from his dad at age three, but he jokes that his father's greatest gift to him wasn't a sax, it was his mother.

Some parental support is indirect, and some is hands-on. Jazz guitarist Bobby Broom's parents supported his practice by paying for lessons with his first jazz guitar teacher and by allowing him to spend long hours in his room, practicing. Other parents might have more direct involvement, like New York Philharmonic trumpeter Ethan Bensdorf's mom, who would sometimes sit with him at the piano to help him with his piano practice.

Some parents who are professional musicians themselves act directly as teachers, helping the young musicians to learn challenging music. The best example I've seen of a parent helping his kid to practice is a video of Gypsy jazz guitarist Dorado Schmitt with one of his sons, Samson, who looks to be about ten in the video. They're working on Django Reinhardt's challenging solo over his tune *Minor Swing*. It's a great example of practice and teaching for many reasons.

First of all, Dorado's feedback is immediate, and without emotion. Very matter-of-fact. His verbal feedback consists of two words, more or less: *No* and *Voilà*. Dorado doesn't let any error pass without stopping to correct it. Dorado usually says nothing beyond that first, "No." He shows Samson the correct way to play the lick and then lets Samson figure out where the mistake occurs. Sometimes Dorado might emphasize a note or two and only once does he actually physically move Samson's fingers to the right spot.

It's rare to get the kind of expert help at home that Samson Schmitt and his brothers enjoyed, but there are lots of things any parent can do to help support their budding musician's practice. The simplest thing is to encourage their young musicians to spend time with their instrument.

Researchers Ericsson and Charness wrote, "The role of early instruction and maximal parental support appears to be much more important than innate talent."[1] It's a finding replicated in lots of other

studies, too. In their study of young Western classical musicians, Howe, Davidson, and Sloboda found that

> even among highly successful young musicians, the majority freely admit that without strong parental encouragement to practice, they would never have done the amounts of regular practicing needed to make good progress. Strong and sustained parental encouragement to practice was evident in virtually all successful young musicians.[2]

Encouragement is very different from enforcement, of course. In the landmark study at University of Chicago led by Benjamin Bloom, the researchers found that parents of successful musicians "did whatever they could to make the practice productive and enjoyable."[3]

It's probably more effective if there is a sense of play in the parent-child interaction where practice is concerned, like Prasad Upasani's time singing some of his favorite songs with his dad during his early morning practice.

Another adorable example comes from Colombian-American musician and video artist Dicken Schrader and his two kids, Milah and Korben. Their group is called DMK and they put together videos in which they perform covers of tunes by popular rock bands like Depeche Mode.

The video is split into four frames to show all the musicians. They all play multiple instruments, and everybody sings. Some of the instruments are homemade, and the keyboard and xylophones are all labeled with each note's letter name. Milah and Korben are getting a great musical education from their dad, and it looks like they're having a blast while doing it. It's probably the best example of a parent supporting their kids' music education that you're likely to find. And the title track says it all where practicing music is concerned: *Everything Counts (in Large Amounts)*.[4]

The examples I've given all involve beginning musicians, because that's the time when independent research has shown that parents tend to interact and help their kids most with their practice, whether it's swimming, chess, or music. As skills develop, most parents become less directly involved because they lack the necessary expertise. Their support shifts, becoming financial, temporal, logistical, and psychological.

As musicians advance further still, to the point where they're studying with acknowledged musical masters, parents still provide the kinds of indirect support mentioned above, often with the added financial burden of college tuition, at least for those musicians who have chosen to practice Western classical music. There is no data on parental support trajectories for rock or pop musicians, but it's a good bet that those who are successful at it probably also had a good deal of parental support. World-renowned choreographer Twyla Tharp said, "Destiny, quite often, is a determined parent."[5]

As a parent, you don't have to be a musician yourself to give your kid what he or she needs to improve. Some of the best support you can provide to the musician you live with is giving them the freedom and encouragement to spend time with their instrument. This can also take the form of the firm sort of encouragement, like requiring a younger child to put in some time messing around with their instrument. I avoided saying "practice" because of the drudgery often associated with the word. If you do require your kid to spend time with his or her instrument, try to help by finding or suggesting fun things to do with their time.

One of the most fun things I remember doing when I was required to practice was to record myself. Though I'm grateful now, at the time I was miffed about the enforced practice time. Because I was a little rebellious, I decided to record myself and play it back loudly, thinking this would fool my parents into believing I was "actually" practicing. The thing is, I *was* practicing. Recording yourself is something pros do all the time. It's the best way to get a clear idea of how you sound. Plus, it's fun!

There are a many kinds of gadgets, software, and other items that will help make practice more interesting, productive, and engaging. You'll find many in Chapter 34, "Go Go Gadget Practice" on page .

Extensions

Sidiki Dembele, Djembefola

Sidiki Dembele plays djembe in Ballet Nimba. In this video, Sidiki plays first. On the Web: http://bit.ly/1tf76hK

Dorado Practicing with Samson

Accomplished Gypsy jazz guitarist Dorado Schmitt helps his son, Samson.
On the Web: http://bit.ly/1oaZnz6

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[1]Ericsson & Charness, 1999, p. 209.

[2]Howe, Davidson. & Sloboda, 1999, p. 277.

[3]Sloane, 1985, p. 455.

[4]Watch DMK play *Everything Counts* at http://is.gd/uvuyib.

[5]Tharp, 2006, p. 8.

Chapter 14
Hot for Teacher

I have come to believe that a great teacher is a great artist and that there are as few as there are any other great artists. Teaching might even be the greatest of the arts since the medium is the human mind and spirit.
John Steinbeck, author (1902-1968)

Serge van der Voo plays upright bass in *Orpheum Bell*, a fun band with an old-timey vibe, based in Ann Arbor, Michigan. All of the musicians in the band double on at least one other instrument (usually two or three), one of which is a donkey jawbone.[1] In addition to laying down rhythm and chord tones on the upright bass, Serge van der Voo also uses his feet to play percussion instruments.

Serge tells a story about one of his bass teachers who was an excellent player, but who had a more passive approach to teaching. Talking about those lessons, Serge said, "It was good if I came in knowing what I wanted, but if I didn't, the lesson kind of flew by and I didn't get much out of it."

In our stereotypical experience of education, we see teachers as the active ones, educating the student. But any good teacher or eager learner knows that's not how it works. If you're not engaged and active in a learning situation, you probably won't get much out of it, just as Serge's example illustrates. Get the most out of your practice by coming to lessons —or any learning situation—with specific goals in mind. One of the most powerful things you can learn from a teacher is how to practice.

Some teachers will practice with you in the lesson, to help you to learn how to practice on your own. That's what Gypsy jazz guitarist Stephane Wrembel and master cello teacher Hans Jørgen Jensen do. It's important to talk openly with your teacher about how to practice so he or she will be better equipped to help you achieve your goals.

Of course, before that, you have to actually *find* a teacher, and choosing the best teacher is a task that will have a telling impact not only on your music practice, but it could impact whether you continue to play

music at all. It breaks my heart and makes me angry to hear someone lament that they never continued with music because of an awful teacher. If you're in a situation like that, head for the hills. Find somebody else. Immediately.

It could be that you need to rethink the kind of teacher you're looking for. According to research done by educational psychologist Benjamin Bloom, Lauren Sosniak, and others,[2] the personal and professional characteristics of the teacher best suited to your needs depends on where you are in your musical development. This isn't a big surprise: beginners have different needs than experts.

I want to be clear that what I'm talking about here is a *private* teacher, someone who will sit with you one-on-one to help you for a half hour or so every week or two. It doesn't have to be someone you pay; the best teachers aren't in it for the money. Stephane Wrembel loves to teach and said he'll often take on a student who is motivated to learn but who can't pay. Lots of teachers do this, including yours truly. A teacher doesn't have to be a formal private teacher either; he or she could be someone you just hang out with who is better than you, and willing to help you out. It's the individual attention that is *super* important.

If you're in a large ensemble, even if you're lucky to have a teacher who actually plays your instrument, a music teacher with a class of 80, or 30, or even only ten students has *way* too much on his or her plate to give you much individual attention, which is *exactly* what you need. One of the most comprehensive studies on the development of talent found that students randomly assigned to a private tutor performed *two standard deviations better* than those assigned to a classroom teacher.[3]

Why is one-on-one learning so effective? When I spoke with Hans Jensen, I found one answer. Hans is a world-renowned cello teacher whose students earn top spots in orchestras and competitions worldwide. One of my own fundamental research questions was how musicians *learn* to practice. I asked Hans how he teaches students to practice. He said, "I show them. I practice with them." He's not alone.

Musician, educator, and researcher Bob Duke from the University of Texas at Austin has conducted a lot of interesting and useful research on music learning and teaching in general, and on music practice in

particular. Duke is more direct about the role of private music teachers. He said, “The reason for lessons is to learn how to practice. And that’s it.”[4]

But who is the right teacher for you, specifically? The answer for this question, like any interesting question, is, “It depends.” The influential study from the 1980s that I mentioned above will help shed some light on the question and its answer.

Rigorous study of talent development hasn’t been around very long. One of the more influential early studies was called the *The Development of Talent Project*, created by Benjamin Bloom, Lauren Sosniak, and others at the University of Chicago in the early 1980s. They conducted in-depth retrospective interviews with 20 experts in each of six different fields. They examined professionals in two artistic fields: concert piano and sculpture; two sports: tennis and swimming; and two academic/intellectual fields: research neurology and mathematics.

A number of insights into the nature of talent development came out of this mountain of data. Contrary to what the researchers expected to find, these internationally recognized experts typically “did not show unusual promise at the start,” when they were beginners. Bloom told a reporter, “We were looking for exceptional kids and what we found were exceptional conditions.”[5] One of those exceptional conditions involved great teachers.

It’s important to keep in mind that the musical genre Sosniak investigated was strictly Western classical music. In some traditions, like Indian classical music, the student-teacher relationship (called the *guru-shishya parampara*) is very highly respected and the relationship is not taken lightly, because it can last for a lifetime. Indian classical vocalist Prasad Upasani had the same music teacher for over 25 years and only stopped taking lessons when his teacher passed away.

The teachers Sosniak describes from her study of Western classical musicians might look slightly different from the kind of teachers a rock musician, a folk musician, or a rap musician might need. But in order for any musicians to continue learning, there are influential figures who play similar roles; respected others who tell the musician straight-up what’s good and bad, and how to fix it, either directly or by example.

Sosniak discovered some surprising similarities about the teachers these experts had throughout their development, despite being from very different fields. As these future experts' talents developed, Sosniak identified three stages of learning, and in each stage, a different kind of teacher was required, whether the student was a swimmer, a concert pianist, or a budding mathematician.[6] When you search for a music teacher, keep these phases in mind.

Phase One Teachers

The first teachers these experts had were often located in the neighborhood, or very close to it. First teachers created playful experiences and made lessons fun and were warm and enthusiastic. Any time the student showed aptitude or curiosity or involvement, these early teachers gave lots of rewards and encouragement. Early teachers were less worried about doing things correctly than they were about sustaining the young musician's interest and enthusiasm. They emphasized playful involvement and encouraged exploration.

Play is the way many creatures learn, and not just humans. Teachers who helped young musicians explore music in a playful, informal, exploratory way not only helped them learn important musical knowledge and skills, they also fostered a sense of enjoyment that is absolutely necessary to sustain any kind of long-term study. As a young student, Bobby Broom remembered working hard to learn chords between lessons just so he could play with and listen to his guitar teacher, Jimmy Carter. Playful musical development also helps to get students ready for Phase Two.

Phase Two Teachers

The teacher-student relationship in the second phase Dr. Sosniak identified tended to be more formal and systematic. The teacher's involvement usually extended well beyond the time spent in the lesson. Teachers prodded and cajoled and convinced students to take part in public demonstrations of their developing skills, like concerts, competitions, and recitals. Prasad Upasani's guru drove him to his first big performance at a music festival several hundred kilometers south of his home in Mumbai.

Teachers in the second phase would also arrange for students to spend time with like-minded people either after school or on weekends, and would often connect the student with professionals who played the same instrument, or expert teachers. New York Philharmonic trumpeter Ethan Bensdorf had just such an experience as a young high school student when he got a lesson with legendary Chicago Symphony principal trumpeter Bud Herseth.

Teachers in the second phase were more critical, rational, and systematic in their assessment of the student's playing. The praise and encouragement students had sought in the first phase were replaced by a desire to receive tips, tricks, and pointers about how to play better in the second phase. The personal relationship changed from one of fondness and friendship to one of respect and admiration.

Phase Three Teachers

The most dramatic change in this final phase was that the personal relationship between the student and the teacher was no longer an important aspect of the relationship. What mattered was the music and the shared dedication to the art of performing. These teachers might have international reputations and be widely recognized as expert performers and teachers in the field.

The teaching was focused on real-world examples of performance. Students perform the pieces for these teachers, and the teachers provide higher-level feedback on aspects of expression and subtle nuances of style, with little or no time spent on basic technical concerns or music theory.

This doesn't mean at the higher levels, a teacher isn't fun. Cello teacher Hans Jensen is a perfect example. He's won awards for his teaching and helps some of the very best young cello players get even better. Hans said, "My first few months of teaching...I tried to be a very serious professor. People told me, 'You can never become a teacher, because you're too silly. You have to really act like a professor.' So I tried it, but I just couldn't do it. So at the end I said, I just have to be who I am."[7]

In the end, what it boils down to is that a great teacher will help you carve *years* off your practice time by showing you strategies and

techniques that you probably won't discover on your own, like the breathing trick tuba legend Arnold Jacobs used to avoid passing out. When Jacobs had to move a lot of air, he'd take CO_2-rich breaths near the mouthpiece or breathe back through the tuba. He said, "When I get into these huge, massive blowing episodes, like *The Great Gate of Kiev* at the end of *Pictures at an Exhibition*, I will deliberately take the air back through the instrument to forestall hyperventilation."[8]

Another good example of a simple strategy a teacher can show you comes from the world of classical piano. Glenn Gould is one of the greatest classical pianists in the last century. His teacher, Alberto Guerrero, taught a simple finger-tapping technique that was fundamental to Gould's exquisitely sensitive touch on the keyboard. Without this simple technique from Guerrero, Glenn Gould might not have developed to become the player he was.

A teacher is *anyone* you learn from, including yourself. Teachers are everywhere when you adopt the mindset of being a voracious learner. As the old saying goes, "When the student is ready, the Master appears."

Finally, we've all heard the saying, "Those who can, *do*; those who can't, teach." What a load of hooey! What the saying should *really* be is: "Those who can, do; those who do and *understand*, teach."

EXTENSION

ALBERTO GUERRERO'S FINGER-TAPPING

Ruth Henderson explains Guerrero's finger-tapping technique as taught to Glenn Gould. On the Web: http://bit.ly/1lKdLvO

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[1] Hear Orpheum Bell's *Chain Stitched Heart* and see the donkey jawbone at 3:05. On the Web: http://is.gd/evetid.

[2] Bloom, 1985; Ericsson & Charness, 1999; Sosniak, 1985, 1990, 2006.

[3] Bloom, 1984.

[4] From Duke's *Video Essays on Learning Music*: *Refinement*. On the Web: http://bit.ly/R4gYMW

[5] Sosniak, 2006, pp. 288-289.

[6] Sosniak, 1990.

[7] From *Taste the String*, a short film on Hans Jensen's teaching. On the Web at: http://bit.ly/1giBdCH.

[8] From Elizabeth Eshelman's McSweeny column, *I Like Big Brass and I Cannot Lie: Confessions from the Tuba World*, at http://is.gd/laquvi.

Chapter 15
Under Pressure

No pressure, no diamonds.
Thomas Carlyle, philosopher (1795-1881)

How would you feel if you knew you had to play *Stairway to Heaven* for the remaining members of Led Zeppelin? The song is beautiful, it rocks hard, it has recorders. There's something for everyone. *Stairway* has been played by so many people that guitar stores post signs declaring "NO STAIRWAY" because they're sick of hearing people hack their way through it.

But imagine that you have to play *Stairway to Heaven* for Jimmy Page, Robert Plant, and John Paul Jones. Also in the audience are President Obama, Yo-Yo Ma, and many other luminaries, musical and otherwise. Would you feel any pressure to get in some practice time? I know I would. Ann and Nancy Wilson—along with John Bonham's son on drums, and a bunch of other supporting musicians—played *Stairway* at the Kennedy Center Honors in 2012. Surviving members of Led Zeppelin were among the musicians receiving the honor. The performance was powerful.

Peer pressure usually gets a bad rap, but peer pressure can be a strong positive influence on your practice. Part of the reason the positive kind of peer pressure is so powerful is that we're emotionally connected to the desire to do well. The pressure is coming from a specific person, or group of people, people we care about, people we don't want to disappoint, people for whom we want to deliver the goods.

There are at least two kinds of peer pressure: in-group peer pressure, and out-group peer pressure. The kind of peer pressure the Wilson sisters must have felt performing for people they likely didn't know well at a prestigious performance is a kind of out-group peer pressure. With the right attitude (meaning not getting too anxious about it), this kind of pressure is significant and valuable, if you channel it the right way, but it's very different from in-group peer pressure.

In-group peer pressure is the kind of pressure we feel when we bring something of ours to our mates, our chums, our buddies, our close

colleagues. The pressure we feel when we have to do something for the peeps in our inner circle has a different quality. We all feel this kind of peer pressure to some degree, and it certainly doesn't go away after the teenage years.

However, when in-group peer pressure is combined with the risk-blind teenager bent on rebellion, you get mosh pits and Punk Rock. And that's a good thing. Risk-taking (especially by teens) is demonized because it's the spectacular failures that stick vividly in our memories. But risk-taking is *essential* to progress. In-group peer pressure will help push your musical skills further, whether you're into Satie or Slayer.

Singer-songwriter Nicholas Barron explains this kind of peer pressure when he spoke about practicing with his band mates. He said playing with his band imbues in him

> a need to *bring* it, so to speak. Because at some level we know we've got to bring it with each other. It may just take one other person to make you go, "I've got to *deliver*, I've got to bring this," even if you don't have the notes under your fingers.

I believe that kind of peer pressure is exactly why many bands often live together. Jimmy Page and Robert Plant wrote most of the album Led Zeppelin III and *Stairway to Heaven* (from Led Zeppelin IV) at the secluded cabin, Bron-Yr-Aur; The Red Hot Chili Peppers lived together while recording *Blood Sugar Sex Magik*; U2 lived in Slane Castle while recording *Unforgettable Fire;* Incubus lived together while writing and recording *Morning View*. Other bands like the Beatles, the Grateful Dead, Talking Heads, Faust, The Naked and Famous, and others lived together for longer periods, often when they were just getting started, and not just to save money on rent. The kind of benevolent peer pressure that comes from playing and practicing with a group of your peers helps to push your skills further than they would be pushed if you practiced alone in a room.

If you grew up playing school music (band, orchestra, and choir) like I did, with its emphasis on solitary practice, it's easy to forget the fundamentally social nature of music-making. In fact, it's the lack of musical interaction that takes place in the Western classical practice room that is *exactly* what many pop and folk musicians reject when they reject

the idea of solitary practice. Learning with others is fun and meaningful. We don't learn to speak fluently in a room alone.

Social interactions have *always* driven new music: jazz musicians in New Orleans hung out together in Congo Square, at parades and other social situations (yes, brothels) as the music developed. Jam sessions and "cutting contests" help jazz musicians push their skills and knowledge further. Sometimes these social interactions are fun, sometimes they're dead-serious. Some stories of cutting contests include knives and guns.

Before the invention of radio and recording technology, people had to make their own music, and doing so was common practice after dinner in Renaissance Europe. Griots in West Africa brought news, ceremony, and rituals throughout the Mali empire with music and dance. Music is fundamentally a social activity. We all know this.

Peer pressure isn't a bad thing, it's a *good* thing. Benevolent peer pressure forces us to grow beyond our current abilities. Brett Gurewitz and Greg Graffin are the chief songwriters for successful punk rock band *Bad Religion*. Gurewitz said:

> Usually, once we have a small batch of songs each, we get together and say, "Here's what I've got," and then the other one goes, "Whoa! Those are pretty good. Okay, here's what I've got," and the other one says the same. And then we both go back to our respective homes and are inspired to write better songs because, being naturally insecure, both of us then naturally think we have to write better so that our songs aren't worse than the other guy's.[1]

Peer pressure isn't just a force that takes kids down the wrong path, it's also a force for good, a force that can give you the boost you need to achieve your dreams. And all of us have peers, no matter what age of musical development we're in. In music, from one perspective, age and experience don't matter. We're all peers. Jazz trumpeter Chad McCullough said it best: "Either you're working to get better or you're not working to get better. And everyone that's working to get better is on the same level, they're just at different phases of the journey."

On your own journey, the more musical peers you can surround yourself with, the better your practice will be. Peers don't have to be

friends. Frenemies are great for motivation, especially a frenemy you might have a musical rivalry with. Playdates aren't just for toddlers. Get together with some other people and make some sound!

Extension

Kennedy Center Honors 2012
In a tribute to Led Zeppelin, Ann Wilson sings *Stairway to Heaven* with her sister and Jason Bonham, John Bonham's son and a full gospel choir.
On the Web: http://bit.ly/1tf1lAw

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[1] Gurewitz's full interview on *Bullseye with Jesse Thorn* can be found at http://is.gd/equmeb.

Part Four

(yes it is)

Time Is on Your Side

Time and Practice

A genius! For the last 37 years I've practiced 14 hours a day and now they call me a genius!

Pablo Sarasate, violinist (1844-1908)

Pick-Up Notes

Forget about the 10,000-hour rule you've heard so much about. It's a red herring. What's important is not the hours you've practiced, but the kind of practice in your hours. Focus on the tree, not the forest.

There *are* temporal aspects of practice worth considering, like time of day, how long a practice session should be, and even how practice skill develops over time.

Chapter 16
The Day Is Long, but Time Is Short

Time is too slow for those who wait, too swift for those who fear, too long for those who grieve, too short for those who rejoice, but for those who love, time is eternity.

Henry van Dyke, author (1852-1932)

The late, great trumpeter Maurice André practiced very early in the morning from 5 to 8 am. As a younger man, Maurice André had spent five years working in a coal mine, moving 17 tons of coal a day. A near-fatal accident forced young Maurice out of work, and during his convalescence he devoted his mornings to music practice. Apparently the habit stuck.

Maurice André's importance in classical trumpet playing can't be overstated. He elevated the trumpet to the ranks of a concert solo instrument, not only because of his gorgeous tone and flawless technique, but also because he appeared on over 300 recordings, and established new repertoire for classical trumpeters.

Practicing early in the morning was especially important for Maurice André at the height of his career. In 1978 André performed 220 concerts and averaged 180 concerts a year in his prime. He practiced early in the morning so his chops had a chance to recover before the evening concert. Other players and published research find that mornings are best for practice, even if the neighbors might not agree.

There are other benefits to morning practice, too. Accomplished jazz trumpeter Avishai Cohen, said, "Mornings are the best for practice." In the morning you're fresh, both mentally and physically, and your powers of concentration are at their peak.

Another strong piece of evidence for the importance of early practice comes from the 1993 study that coined the term *deliberate practice* and introduced the 10,000-hour rule.[1] The best musicians in that study—all classical violinists, it should be noted—had their most intense practice session in the morning hours. Master tuba player Rex Martin said, "I

firmly believe that every hour you practice before 10 a.m. is worth two hours later on."

It's not absolutely necessary to practice in the morning, of course. Jazz trumpeter Ingrid Jensen takes care of business issues in the morning so she's not distracted by those duties when she practices; tabla player Rupesh Kotecha chooses a *raga* to study in the morning, writes down the song's details on a note card and refers to his notes throughout the day. When he finally gets to work on the piece during his evening practice session, he's been preparing for it all day.

Rupesh's approach has a lot of merit according to a new study that suggests that the time of day you practice is not as important as how soon practice is followed by sleep. Most of the best musicians in Ericsson's deliberate practice study—as well as most musicians I spoke with—take naps in the afternoon, after their morning practice session. Sleep is so important that it gets a chapter of its own later in the book. Early music practice followed by a nap is a one-two punch.

EXTENSION

MAURICE ANDRÉ PLAYS TARTINI, 1995
Maurice André plays the third movement of Tartini's *Trumpet Concerto in D Major*. On the Web: http://bit.ly/RRGohv

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[1] Ericsson et al., 1993.

Chapter 17
How Much Is Enough?

Time is the coin of your life. It is the only coin you have, and only you can determine how it will be spent. Be careful lest you let other people spend it for you.

Carl Sandburg, poet (1878-1967)

Charlie Parker—the brilliant jazz saxophone player and co-creator of bebop—had blinding speed, brilliant technique, and beautiful musicianship. One of the legends associated with Parker's rise to greatness in the jazz world happened when Parker was a teenager. In 1937, Charlie Parker went to an open jam session at the Reno Club in Kansas City, a jam hosted by Jo Jones, the famous drummer for the Count Basie Orchestra, one of the most popular bands in the country at the time. It was a top-notch jam session and Jones wasn't known to be kind to musicians who didn't have their chops together.

Parker lost his place in the über-standard *I Got Rhythm.* Jo Jones stopped playing to throw a cymbal at Parker, who was then jeered off the stage. Parker felt humiliated, and vowed to practice even harder until he could come back to prove himself. How much did he practice?

In an interview with Charlie Parker, another jazz saxophone legend, Paul Desmond, asked Parker if his fantastic ability came as a result of practice, or from performing a lot. Parker said,

> I can't see where there's anything fantastic about it at all. I put quite a bit of study into the horn, that's true…. I used to put in at least from 11 to 15 hours a day…over three or four years.[1]

Desmond responds saying, "I guess that's the answer," and Parker says, "Well, that's the facts, anyway," and gives a little laugh. I've often wondered what that little laugh signifies.

There seems to be a disconnect between accounts of prodigious amounts of practice like Parker's, and what much of the published research has to say about the ideal amount of practice time. Most accounts

say that two hours is the absolute maximum, and others say the maximum number is four hours. Most accounts say that practicing more than that can actually be harmful.

That doesn't square with Parker's account, or solo violinist Nicola Benedetti, who said that as a young practicer, her mother sometimes had to stop her from practicing through the night. Nearly every professional musician I've spoken with about practice tells a similar story: at some point in their life, they practiced *many* more than two to four hours a day, usually around six or eight hours. So what's going on?

Much of the research that cites two to four hours as the ideal amount of practice examined practice routines of master musicians at the height of their ability. This makes sense, but we have to remember that these are expert Western classical musicians who had already accumulated *decades* of practice experience in most cases. They've learned to be supremely efficient with their practice, getting more done in half an hour than someone without that experience might do in an hour and a half or more.

Tuba virtuoso Rex Martin said that before college he probably practiced less than an hour a week, but once he matriculated, his time in the practice room increased dramatically. Rex said he would "routinely practice six or eight hours, every single day, never took a day off." Later, Rex said the thing that had changed the most for his practice over the years was his efficiency. While he practiced six to eight hours as a younger man, Rex said now he "could probably get that much done in an hour, an hour and a half."

Musicians (or anyone, really) who put in *that* much practice time every day, over weeks, months, and years, have honed their abilities to the point that they're highly efficient with their time. All of that experience gives these musicians a deep knowledge of their capabilities and tendencies, so they know *exactly* what they need to do in order to get better as quickly as possible, with no wasted effort.

The thing is, many of us don't have the drive and passion to put in 11-15 hours a day like Charlie Parker, or six to eight hours like Rex Martin, or eight hours a day in the subway like Nicholas Barron, or like Bobby Broom and Erin McKeown, both of whom disappeared into their bedrooms to practice intensely for most of their high school years. Researchers Ellen Winner and Jennifer Drake called it a "rage to master." If you *do* have that

drive to put in the time—what jazz great Sonny Rollins called his "reverie"[2]— lucky you! See ya later.

If your own reverie hasn't overcome you yet, know that it can happen at any time. Sonny Rollins embarked on a three-year reverie as a 29-year old professional musician during which he disappeared from "the scene" to practice really hard, on a bridge, of all places. Until that bug bites you, thinking about practice in terms of the amount of hours you have to put in is misleading. Put in as many hours as you're driven to put in. It's the passion and interest that are most important, not the numerical value of accumulated practice hours. Forget the amount of hours you practice and focus instead on the quality of the practice in the hours. Less is more, when the less is more focused.

If you're a beginner, regardless of age, a 20-minute practice session a few days a week is perfectly normal. Daily practice is better, but early on, a few days a week allows you to remain excited about the new skills you're learning and won't make practice seem like a boring chore, a feeling you should avoid at all costs. Of course, if you're really on fire to play, there is little harm in practicing every day for longer periods, but the key is nurturing the curiosity, interest, and enjoyment that is the hallmark of the best practice sessions, a quality that results in long-term steady improvement.

You're in this for the long haul, so you need the mindset not of a sprinter, but of a marathon runner, or even better, the mindset of a musher on the 1,100-mile Iditarod sled-dog race. Improvement is a long, slow process. Beware of injury, not only physical injury, but psychological burnout.

Overpractice

Overpractice is when you practice *more* than you think you need in order to ensure you're fully prepared for a performance. To a punk rocker and indeed, many pop musicians, this kind of practice is anathema to the spirit of music. I think the reason practice is so disdained in these traditions are exactly the reason why overpractice is risky. Too much practice can kill the freshness of the music, for both the listener and the performer.

Concert pianist Stephen Hough says the risks of too much practice are twofold. The first is

> just getting tired of the piece, playing it over and over again, so it just becomes something that has no freshness left. And the other danger is becoming so prepared that your mind starts to play tricks.... You know sometimes you look at a word on a page to see if it's spelled correctly, and the longer you look at it, the more completely indecipherable it seems; it almost seems like a different language. There's something like that with practicing.[3]

One way Hough and a lot of other pros get around this risk is to focus only on the trickiest, most challenging parts of the music. As Hough talks through his practice approach to Rachmaninoff's *Rhapsody on a Theme of Paginini*, he rattles off five difficult sections that receive the bulk of his practice focus. Leaving the rest of the piece alone allows Hough to retain a sense of freshness that's necessary for a great performance.

Break It Up

There is a lot of evidence that spreading out a learning task will help you learn it more quickly. This means it's better to practice a short bit every day than it is to sit down for three hours once a week. Taking it a step further, breaking up your practice into two or more sessions per day is also better than one long chunk of time just once a day. Many professional musicians have an intensive practice session earlier in the day and a lighter one later in the day, usually after a nap. If you can, do at least two sessions. This topic is important enough to merit its own short chapter, next.

Beware of Injury

Putting all that time in on an instrument, often repeating things many times, puts no small amount of strain on the body and mind. Many musicians, at some point in their development, struggle with injury. Ingrid Jensen said she almost gave up playing the trumpet because it just hurt too much to play. The drive to play was too strong to let go, so Ingrid began to study how she moved, adopting qigong, and other physical practices. Fingerstyle guitar virtuoso Leo Kottke took four years off to completely

change the way he played guitar because the technique he'd been using was destroying his hands. Other musicians turn to yoga, general physical fitness, or specialized practices like the Feldenkrais Method or the Alexander Technique to overcome and avoid injury. You'll learn more about some of these methods when you get to Chapter 37: Let's Get Physical.

Other Ways to Practice

There are many more ways to get better than sitting in a room working on your instrumental technique. The final and longest section of the book is loaded with some of these approaches. Spending time listening, watching, talking about, and thinking about music all contribute to your growing understanding of music and your ability to make it. Watch a documentary, go to an open mic, pick up another instrument, peruse YouTube. According to every professional musician I've spoken with, all of these activities contribute to your overall skill. Practice doesn't happen only in the practice room. Think of every musical experience as a kind of practice. If you do, you'll find a kind of all-encompassing focus that will help you get better. Practice is a way of life, not an activity you do for a certain amount of time every day.

And since this chapter is all about how much time you can or should spend practicing, understand that even a tiny burst of practice—as little as one or two minutes a day—can get great results. That approach is covered in the next chapter.

Extension

Charlie Parker Interview

Paul Desmond, saxophonist for Dave Brubek, interviews Charlie Parker on Boston radio in 1954. On the Web: http://bit.ly/1obpKVq

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[1] Parker, 1954. Online at http://is.gd/ocexis.

[2] Winner & Drake, 1996, p. 271; Sonny Rollins, at http://is.gd/xebara.

[3] Hough talks about a life spent practicing at http://is.gd/bobude.

Chapter 18
Guerrilla Practice

You can do so much in ten minutes' time. Ten minutes, once gone, are gone for good. Divide your life into 10-minute units and sacrifice as few of them as possible in meaningless activity.

Ingvar Kamprad, ikea founder (1926-)

Giving rat-sized sea slugs an electric shock might seem an odd way to test how memory gets encoded in the brain, but just such a study earned neuroscientist Eric R. Kandel a Nobel Prize in 2000. Kandel used the large sea slugs not only because shocking humans in experiments is generally frowned upon, but also because these particular gastropods—known as the California sea hare—have particularly large neurons, making them easier to study.

In Kandel's original study, the sea slugs were shocked at regular intervals in the course of the experiments. More recently Jack Byrne and his research team created a mathematical model that they thought would deliver shocks to the snails more efficiently. Instead of five shocks given at 20-minute intervals, Byrne delivered three shocks every ten minutes, the fourth shock five minutes after that, and a final shock 30 minutes later. Five days later, snails receiving that shock treatment *still* remembered it, while those getting the regular jolt every 20 minutes did not.

It's a stretch to draw any rock-solid conclusions about memory from the finding of a couple of studies, Nobel Prize or not. That's never stopped me from trying out a practice strategy for myself to see if it works. I decided not to electrocute myself, though. My experience spreading out short bursts of practice has been unusually effective, especially when I'm learning a new chord progression on guitar and have little time to do a full practice session. I call it Guerrilla Practice. Henry Kissinger said, "A conventional army loses if it does not win. The guerrilla army wins if he does not lose."[1] Guerrilla practice is like that, too. Attack your goals at random moments throughout the day. For Guerrilla practice to work, you have to have a *very* simple goal, like a nano-goal or a micro-goal.

Here's an example: at the moment, I'm under the gun to get this book finished, so practice time is ultra-scarce, but it's not something I'm willing give up entirely. So, as I write, I take short breaks of five minutes or less. Right now, I'm learning Django Reinhardt's rhythm guitar changes on the great Fats Waller tune, *Ain't Misbehavin'*.

My guitar is close to hand, which is an important detail, because even the minute or two it takes to get it out and tune it is more than I can spare. It's ready to go. The chord shapes for *Ain't Misbehavin'* are unfamiliar, and awkward for me, so I'm taking only two chords at a time. I slowly move from one to the next for a minute or two, then get back to work. My guerrilla practice intervals don't have the benefit of a mathematical model, but I do try to loosely mimic Byrne's intervals in the snail-shocking study. And it works great! I've learned the entire A section of the tune up to performance speed in less than a week. You should try it, too.

Your guerrilla practice doesn't have to be multiple short sessions. Singer-songwriter Erin McKeown said, "Sometimes I'll play guitar while I'm waiting for my tea water to boil." Jimi Hendrix took his guitar with him *everywhere*, even the bathroom.[2] Even with just one or two minutes of practice a day you can accomplish a significant achievement. Hans Jensen helped one of his cello students learn a tough cello etude with that much daily practice.

Hans Jørgen Jensen is an affable and animated cello teacher whose students regularly win major competitions and land spots in professional orchestras around the world. In 2010 he was awarded the Artist Teacher Award by the American String Teachers Association, a prestigious award also given to Pablo Casals, Isaac Stern, and other artist-teachers of the highest stature. Hans told me about one of his students who was so pressed for time, she could only spare one or two minutes for daily practice.

His student was learning the Popper cello etude #38. Hans said, "It's a hard etude. It goes fast! I think she worked on it six weeks. At first, for the first two weeks, she only practiced one minute a day. Then we changed to two minutes. It's really hard! One of the hardest."

They mapped out—in precise detail—a tiny goal for each practice session. At the end of six weeks, practicing only one or two minutes a day,

she could play the piece. That's the power of clear, easily achieved goals and guerrilla practice compounded over time.

I used to think that I needed at least an hour or two to practice, otherwise it wasn't worth it. Hans said he used to think that, too, but he told me, very emphatically, "That's *totally* wrong." Hans said he had another student who got better lots faster than other players. When Hans asked him what he was doing to get so much better so much faster, he said he used short moments of down time to practice, mostly during group rehearsal warm-up time. Ten or fifteen minutes here and there really adds up. Practicing sporadically is a great way to burn what you're learning into your memory, whether you're a sea slug, a musician, or trying to learn something else.

We're all busy, but I know I can spare at least two minutes a day for an intense burst of practice. I bet you can, too.

Extension

Taste the String: Hans Jørgen Jensen

Hear some gorgeous cello playing and see examples of Jensen's teaching and philosophy. On the Web: http://bit.ly/1giBdCH

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[1] *The Viet Nam Negotiations*, 1969, p. 214.

[2] From the 2013 short film, *Hear My Train A Comin'* at http://is.gd/xupoti.

Chapter 19
When No Practice Is Good Practice

To do nothing at all is the most difficult thing in the world, the most difficult and the most intellectual.
Oscar Wilde, poet (1854-1900)

Clifford Brown was one of several great jazz trumpeters who passed away at a tragically young age. He didn't go out like jazz trumpeter Lee Morgan, shot onstage by a mistakenly jealous girlfriend in a part of town where white paramedics were scared to go; Clifford Brown didn't die from heroin addiction complications like trumpeter Fats Navarro; and Clifford Brown didn't kill himself with alcohol like the Dixieland trumpeter with the best name ever, Bix Beiderbecke. Clifford Brown was, by all accounts, a man with a sweet and humble disposition. He didn't smoke, do drugs, or drink to excess. A car accident took his life at age 26, but not before he laid down some of the most musical jazz trumpet playing ever recorded.

I discovered Clifford Brown in my early thirties, which still baffles me, as though someone kept a great secret from me for 30 years. If only I'd discovered Clifford Brown in middle school! Four years older than Clifford Brown was when he passed, I ordered *Study in Brown*, and was listening to it while driving north from my home in Anchorage, Alaska to teach music lessons in Palmer. The 12-bar blues tune *Sandu* came on and knocked me out.

Sandu starts with an exuberant upward melody. Harold Land's tenor sax is fused in perfect unison with Clifford Brown's trumpet, no Auto-Tune required. On the last four bars of the melody, their voices split into a tasty understated harmony. The great Max Roach lays down the beat on drums, with George Morrow in the pocket on bass, and Richie Powell at the piano. I was immediately enraptured. Hooked. It was love at first listen.

Then it got better. After the 12-bar melody goes by twice, there's a sweet break. A break is total silence for a few beats. Early jazz icon Jelly Roll Morton said, "Without a break, you haven't got jazz."[1] Out of the

short break in *Sandu*, Clifford Brown launches into his improvised solo. After Brown's solo, I said out loud something like, "Oh, my god!" or, more likely, something with an expletive in it. I promptly listened to the solo again. And again. And again. And again. And again, trying not to crash my car from listening so intently.

Several years later, I started to learn Clifford Brown's solo on *Sandu*, and when I began working on it, I happened to be reading a fascinating study.[2] As usual, I wanted to try it for myself to see if the strategy worked for me. The weird thing is that it involves *not* practicing. Sort of. Let me explain.

The question the researchers studied was whether actual practice on a musical task was better than other methods of engagement. They examined a person's ability to tell the differences between pitches. Participants were split into four groups, and each group "practiced" in a different way. I use "practice" because part of the treatment involved doing a completely different task while the sound they used in the experiment was still being heard in headphones, even though participants were focused on the different task.

Only adults ages 18-30 participated in the study. Before receiving the treatment, the participants were measured to see how small a difference they could hear from a standard tone. Participants were then split into four groups, with each group practicing a different way for one week. At the end of the week, they were measured again to see whether their ability to hear very slight differences was better. Here's how each group practiced:

1) Twenty minutes per day for a week practicing a pitch-discrimination task.
2) Twenty minutes per day practicing the pitch-discrimination task; plus an additional 20 minutes doing an unrelated puzzle task while the tone was heard on headphones.
3) Forty minutes of practice per day on the pitch-discrimination task alone.
4) Forty minutes per day, only working on the puzzle, with the standard pitch heard in the headphones.

The researchers chose a 20-minute practice session because they determined that 20 minutes wasn't enough time to produce real learning on this task. On that score, they were right. Groups 1 (20-minute practice) and 4 (40 minutes puzzle + tone) showed no improvement in their ability to tell the difference between pitches. Group 3 (40-minute practice) did show improvement from their extended practice time.

And here's the cool part: Group 2 (20-minute practice, 20-minute puzzle) showed the same amount of improvement as Group 3! And the order of the treatment—practice-then-puzzle, or puzzle-then-practice—didn't matter. Now, it's just one study, so it's not *proof* by any means, but that shouldn't stop you from trying something out to see if it works for you, like I did. Thich Nhat Han said, "Our own life is the instrument with which we experiment with truth." Good advice, don't you think?

So, imagine you're me: you want to learn Clifford Brown's solo on *Sandu*, but you've got other unavoidable tasks to do, like responding to email, cleaning the house, and writing your dissertation. My thinking was that if I've only got 20 minutes to practice, I can do that 20 minutes of practice and then go about my other tasks while keeping the music playing in the background, or over my headphones. That's what I did.

The study above suggests that you'll continue to learn and will have as much progress as someone who practiced 40 minutes and didn't get any of those other tasks done. My own personal experimentation was informal, but it seemed there was a difference. Before learning this solo, I'd learned many other solos by ear. It felt like I got this one under my fingers much more quickly than others of similar difficulty. It's certainly not definitive proof that the method works, but it's a study that would be interesting to do with more rigor. You researchers out there should consider putting this on your list. It's on mine.

Using this method, it didn't take long for me to get that solo embedded in my brain, making the process of finding the notes on the horn much easier. That's the big challenge playing anything by ear. You've got to really *hear* the sounds in your mind's ear. When you can, it's just a matter of fishing for fingers[3] on the horn until you find the notes that match what you hear. Following a practice session with another 20

minutes of listening to the music you're trying to play is something I'd recommend you try in your own practice.

When imitating another player, the notes are the easy part. The *real* challenge in this example is putting the kind of expression into those notes that Clifford Brown did. There's some seriously deep feeling in those sounds. In some ways, finding that kind of expression is impossible, because that's *his* voice. Only Clifford Brown can play it like Clifford Brown.

Extension

Clifford Brown Plays *Sandu*

Towards the end of this short sample you'll hear Clifford Brown begin his improvised solo. On the Web: http://amzn.to/1klOrOt

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[1] Alan Lomax interviews Jelly Roll Morton in 1938: http://is.gd/licaja.

[2] Wright, Sabin, Zhang, Marrone, Fitzgerald, 2010.

[3] Ingrid Jensen told me she learned this phrase from Clark Terry. Hear her interview about practice at http://is.gd/rofaza.

Chapter 20
Blame It on My Youth

World-renowned cellist Pablo Casals was asked why, at age 90, he still practiced. He said, "Because I think I'm making progress."
Pablo Casals, cellist (1876-1973)

Wynton Marsalis said, "The nerves are a problem on trumpet, because when you mess up, everyone can hear it. Just remember most people are too polite to say anything about it."[1] I think about Wynton's words of wisdom whenever I hear the *Concerto for Trumpet in E*^{b} by Johann Nepomuk Hummel. I also feel sick to my stomach. I'm whisked back to my high school self, when I'm about to perform the three-movement concerto on a B^{b} trumpet. <ahem> Excuse me, I meant to say, "attempt to perform" the piece.

The Hummel concerto is an ambitious piece for any trumpet player, let alone a high schooler; let alone a kid from rural Alaska who has had no lessons and little experience. Somebody should've stopped me. I was at the tail-end of one of four phases of practice that is the focus of this chapter. The phase is called *unconscious incompetence*. In my case, we can give extra emphasis to the "incompetence" part. This is painful to relate; I'm cringing as I type this.

Before I could move to the next level of awareness, I had to play the *Hummel Concerto*. Well, *try* to play it. The failure was what pushed me into the next phase. I was nervous for the performance, of course, but I had practiced (or so I thought), even though I'd never actually performed the piece before.

I sat in the warm-up room to warm up and a feeling of dread began to creep over me. I began to suspect I wasn't prepared. The performance was inescapable at that point, probably a half hour away. So, like the rookie I was, I thought I'd practice a little before the performance. With a mounting sense of horror, I actually practiced a *lot*. It was becoming sickeningly clear to me—much too late—that I didn't really know the piece. I worked through the most difficult sections (there are a *lot* of them)

and began to get tired. My chops were getting tender. Then, it was show time, so I stopped practicing and went to perform with a feeling of trepidation in my gut.

That was the single most disastrous performance of my then-short life. It remains the worst performance nearly 30 years and many more performances later, and it will be the worst performance for the rest of my life. I'll *never* make that mistake again. Ugh. Though I had planned to do all three movements, the adjudicator stopped me after I limped to the end of the first one. He knew the score. He did have some nice words for my accompanist, Peggy Brandt, who was fantastic. Ouch.

There are four phases of musical awareness that have an impact on how you practice, and probably the most eye-opening transition is from the first phase to the second. That transition can be difficult, but it doesn't have to be as painful as the embarrassing scenario I shared. Here are the four phases.

Phase 1: Unconscious Incompetence

In this first stage, you're bad but you don't know it because you don't yet have the ability to perceive the errors you're making (refer to the Clam Detection Graph on page). Detecting errors doesn't matter so much in this stage. You're having fun, which is the most important part of this stage. The Unconscious Incompetence phase is one of the most pleasant of all four stages, because, as the saying goes, ignorance is bliss. You're learning your instrument, playing at a basic level, and you're not aware of how much you don't know, or how much there is to know. This is a super-important stage, because music is *supposed* to be fun. We learn best through play, and being too self-conscious about what we're doing will ruin the fun.

Colin Oldberg is a trumpeter currently playing in New Chicago Brass. When Colin spoke to me about his practice he was the principal trumpeter in the Hong Kong Symphony. Because of the Snowpocalypse in 2010, the trumpet soloist who had been booked to perform a trumpet concerto with the Hong Kong Symphony had to cancel. Colin had less than a week to prepare the *Haydn Trumpet Concerto*, another "big gun" in the trumpet concerto repertoire, a challenging piece. Unlike the high school

performance of mine I just foisted upon you, Colin's performance with the Hong Kong Symphony Orchestra was superb.

I asked Colin what he would teach his younger self about practice that he wished he'd known. He said he probably wouldn't tell young Colin anything, because if he actually knew how much practice it would take to play at the level he'd achieved, he probably wouldn't have continued. That's the beauty of the Unconscious Incompetence stage. You're blissfully unaware of how bad you are, of how much work it will take to get good, and yet you're enjoying yourself.

This stage is also the most stress-free phase of all of the phases. If you're just starting out, especially as an adult or if you're particularly self-conscious or aware of the artistry of others, this stage might not even happen to you. That would be sad. If you're just starting out and you *know* how much of a beginner you are, try to cultivate a sense of play in your practice. Cultivate a non-judgmental exploration of sound with your instrument and your body in relation to it. It's fun! It's *supposed* to be fun. And the fun might even be necessary.

Phase 2: Conscious Incompetence

When you're in this second phase, Conscious Incompetence, the abilities of the best players can appear profoundly magical, especially early in the stage. Wynton Marsalis's performance of Hummel's *Concerto in E*♭ seemed impossible to me as a teen.[2] To paraphrase science fiction wizard Arthur C. Clarke, "Any sufficiently advanced ability is indistinguishable from magic."

There's a reason we have the legend of great musicians like Robert Johnson making a deal with the devil at a crossroads at midnight. It seems like wondrous musical ability just *has* to be magic. There *is* a deal that was made, but it wasn't with the Prince of Darkness at a crossroads. The crossroads is a practice room. The devil to be dealt with is practice. Wynton Marsalis calls it "tackling the monster."[3]

The Conscious Incompetence phase is the most unpleasant of the four, and alas, it's usually the longest. In this stage you've become aware of your inability in relation to those who can play the instrument better than you, whether it's Wynton Marsalis, or the girl who is a couple of years ahead of you. You've become aware that you're not so hot and

you're beginning to understand that you've got a lot of practicing and learning to do. That can be a blow to the ego if you believe musical talent is a fixed thing—that you've either "got it" or you don't. If you feel that, review Chapter 7.

Keeping up your levels of motivation and excitement and desire to make music are crucial in this stage, as is managing your goals so that you don't feel incompetent all the time. Because competence is relative, Conscious Incompetence can be a sticky phase, trapping hapless musicians like flypaper or a quicksand bog. The stage can last decades, or, sadly, even a lifetime. Rex Martin, when he described these phases, told me that Conscious Incompetence "is really the only bad level. This one is debilitating. The problem comes when students become so perfectionistic, they think that no matter *what* they do, they're incompetent. They never then can rise to these higher levels."

And competence is relative. For example, if I judge my competence on trumpet compared to Maurice André or Dizzy Gillespie, I'm doomed to live forever in the unpleasant realm of Conscious Incompetence. I'll never, ever be as good as either of those guys. At some point, you have to own both your competence and your incompetence. Cultivate a cautious disdain for the infinite ways you're incompetent.

Better yet, turn the mind off entirely, as jazz pianist Kenny Werner recommends. He said, "This is a practice of hearing a sound, not just accepting it, but—even aggressively—loving it."[4] Sounds kind of easy, doesn't it? But just like anything useful, it takes practice.

Phase 3: Conscious Competence

Now you're getting somewhere. Forgive me for pointing out the the obvious, but these phases don't follow in lock-step, one after the other, with clean breaks between phases. Hardly. Life is messier and more random than that. There's no reason you can't dip into this phase early and often on your musical journey. Again, it's a matter of setting reasonable goals, and working on your abilities so you achieve them.

In this phase, you're aware of what it means to be competent, and you're aware of the kind of practice you need to do in order to reach that competence, whether it's totally owning an open mic performance of a new tune you wrote, playing flawlessly for your spring concert, nailing an

audition, or dominating a competition. With well-managed goals, diligent practice, and perseverance, *anybody* can reach this level. There is yet one more level, however, inhabited by the greatest of players.

Phase 4: Unconscious Competence

Just before they went on stage for a 1964 performance, Miles Davis—then a wealthy man—told his young, hungry band mates—Herbie Hancock, Tony Williams, Ron Carter, and George Coleman—that they were going to do the concert for free. Things got heated, to say the least. Everybody was angry. Seething. Then they went on stage.

They left the stage feeling awful. Recalling the gig, Herbie Hancock said, "When we walked away from that concert, we were all dejected and disappointed. We thought we had really bombed…but then we listened to the record—it sounded fantastic!"[5] Music critic Colin Fleming says it's one of the best concerts ever given. He described it as "speed-metal, punk, thrash-jazz, with Davis acting almost as conductor." There may be no better example of Unconscious Competence.

Most of us know what this phase feels like where language is concerned. It's like a long conversation with a great friend, and the talk flows effortlessly. This is unconscious competence. The specifics of syntax, the tyranny of grammar—none of those niggling details matter, because we've absorbed them to the point that we can converse without conscious thought. This is similar to being "fluent" in music.

Moving beyond the Conscious Incompetence stage—or not caring about it in the first place—is important to fostering a lifetime of music-making. You *will* get better! The measure of success is entirely relative. Adopt a punk rock attitude. Take to heart the words of punk rock icon Ian MacKaye. He said, "The first time I played a bass, I was successful. Success is not a goal. Success is in the doing. Always."[6]

Extension

Speed-metal, punk, thrash-jazz

1964 concert led by Miles Davis, with Herbie Hancock (p), Ron carter (b), and Tony Williams (d). Hear the story and listen to superb musicians deep in the Unconscious Competence phase. On the Web: http://n.pr/1h4RTsp

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[1] Marsalis, 2014.

[2] Marsalis plays the Hummel Concerto 3rd movement: http://is.gd/amexah.

[3] Hear some great music and hear Yo-Yo Ma and Marsalis talk practice. On the Web: http://is.gd/apefuz.

[4] Werner's NYU master class is on the Web at http://is.gd/etijay (6:18).

[5] Carr, 1995, pp. 194-195.

[6] Zuckerman, 2013, p. 154.

Chapter 21
When I'm 64[1]

Age is opportunity no less than youth itself, though in another dress, and as the evening twilight fades away, the sky is filled with stars invisible by day.

Henry Wadsworth Longfellow, poet (1807 - 1882)

North of Chicago, the Glencoe New Horizons Community Band needed a trumpet player for a concert, so I went to sit in with these friendly, musically minded people, nearly all of whom were over 60. I was glad for the opportunity. Sight reading a concert is a fun challenge requiring a great deal of focused attention. Also, the gig paid fifty bucks, a minor windfall to a graduate student. There was the added benefit that it was a safer way to make a buck than giving blood or being a guinea pig in a research study.

I arrived for the gig, met the ensemble's directors, Sally Bowers and Emma Joy Jampole, and headed for the trumpet section, chatting briefly with Harvey and Gene, who played second and third trumpet, and finally taking my seat next to section leader Jerry Scott. Jerry was in his early 80s and in possession of a rapier wit. Jerry told me he practiced two hours a day, and he had the trumpet chops to back up his claim (something that simply can't be faked).

I'm not sure why, but we trumpet players are often incorrigible jokers, the Trickster archetype in the wind ensemble pantheon. We were directed to the section in a Beatles medley in which the trumpets played the melody of *When I'm 64*. Jerry leaned over to pull up the sheet music and said, "Pffft! When I *was* 64." Everyone within earshot cracked up. Jerry had been 64 about 20 years earlier. I hadn't been part of a wind ensemble trumpet section for nearly as long, but Jerry's joke made me feel as if I'd never left.

Contrary to the old saw that *you can't teach an old dog new tricks*, research is proving that our ability to learn new things continues unabated until the end. The brain retains its plasticity throughout life. Many members of bands like this around the country have never played an

instrument before. One of the more interesting recent studies showing fairly conclusive evidence of adult brain plasticity was done by Kirsty Spalding. She found new neurons grown in adult brains thanks in part to past explosions of above-ground nuclear bombs.[2]

Radioactive carbon-14 released into the environment by those bombs has been incorporated into our DNA. Despite the troubling nature of this fact, because the decay rates of carbon-14 are known precisely, researchers can calculate exactly when a neuron was grown. Spalding and her team discovered that—in the hippocampus at least—new neurons were found growing even in adults over 70 years old.

In the following section are a few things to keep in mind about practice if you're picking up your instrument as an adult of any age, whether you're a first-timer, or a "comeback player."

Take Your Time

The mechanisms behind the process of neural plasticity are more facile in the young. Younger brains learn more quickly in part because a protein that inhibits the brain's ability to re-wire itself has not yet been activated. The protein, called "NoGo Receptor 1" (NgR1) is dormant from childhood through most of adolescence. As we age, the protein is gradually activated, causing the brain's wiring to become relatively more fixed, and this is one reason changes to the brain take longer for adults.

One fascinating thing about this protein is that some researchers, including Stephen Strittmatter at the Yale School of Medicine, have succeeded in turning off the receptor in mice, making the brain more malleable, able to more quickly "rewire" itself in the face of new stimuli. Human trials are supposed to begin in a couple years. Strittmatter hopes to help people recover from strokes, spinal cord injuries, and post-traumatic stress disorders.[3]

If it's a harmless procedure, maybe you could also use it to learn piano more easily as an adult. That would be cool. But until then, it's important to take your time and to set easily achieved goals. Setting easily achieved goals is super important not only because it will give you something specific to work toward; an easily achieved goal will also provide you with that oh-so-sweet feeling of making progress.

No matter what your age or what genre of music you want to play, finding a group of like-minded musicians is one of the greatest challenges. Music is a social art, and socializing through music has real benefits. If you live in a place like Chicago, there are many options, including *The Old Town School of Folk Music*, one of the best community music schools in the country. More and more community bands are popping up around the U.S., including New Horizons bands. As of this writing, there are 214 registered New Horizons bands, totalling close to 10,000 members.

If that's not your thing, small ensembles have always been the most popular way to make music, whether it's a string quartet, a brass quintet, an old-time fiddle band, or a power trio. Chances are there are people who live near you already participating in groups like this. Start looking for them and join one, or start your own. Craigslist or the local classified ads are good places to start.[4] Even playing duets is tons more fun than practicing alone.

Other Benefits of Music Practice

There is additional evidence that as we age, participating in the arts has a profound affect not only on our quality of life, but on our biology, too. There's a correlation between music participation and the body's production of human growth hormone (hGH). In one study, 61 older adults in a group piano class showed

> a dramatic increase in hGH levels (hGH is implicated in such aging phenomena as osteoporosis, energy levels, wrinkling, sexual function, muscle mass, and aches and pains) and a decrease in anxiety, depression, and perception of loneliness, taking into account differences in life events and social support.[5]

Being engaged in musical thinking through practice is not a magic elixir that will make you younger or smarter, but by most measures, engaging in music making *does* make life just a tiny bit better. It certainly does for me, anyway.

Practice Without Instruments

Maybe the process of learning a new instrument doesn't appeal to you, or maybe the instrument you played in school when you were younger just doesn't appeal to you any more. Anybody who has used a spit valve or cleaned the inside of a brass instrument might fall into this category. Maybe you're just not interested in sounding like a beginner for several years. Totally understandable.

There is another option: computers and other electronics. While I haven't seen any empirical data on how interacting with music in this way affects people, that doesn't matter. I've seen the positive impact firsthand from one of my own research studies.

During my graduate studies, I convinced some older adults to come to the music computer lab once a week for six weeks to learn how to compose music using Apple's GarageBand program.[6] Despite the challenges, the experience was a lot of fun for me, and for the students, too. When the course ended, one of the more accomplished class members went out and bought a new iMac just so she could keep using GarageBand.

GarageBand is a fairly intuitive program that can provide hours of entertainment and musical engagement. Even though you're not actually playing an instrument, you're still working with rhythm, melody, harmony, form, and all the other musical elements. In addition to ready-made loops that can be used for composing music, it's easy to plug in a simple MIDI keyboard (or any other MIDI device) to input your own sounds.

There are some great tutorials online, like the one for absolute beginners at http://bit.ly/1i0vNHv. Even better would be to find someone who can give you some real-time GarageBand lessons. Group lessons can be a lot of fun, too. Hit up your extended family members or get in touch with a local college or high school and I bet you can find someone to help teach you the program.

Music plays a vital role in our experience of being alive. Simply *listening* to music has the power to transform us dramatically, even in the later stages of our lives, as is demonstrated so wonderfully by Henry in the video linked below. Music is the best kind of magic, not because of some arcane property, but because it makes us feel something deep and ineffable. Music is inextricably wound up in who we are.

EXTENSION

ALIVE INSIDE: MUSIC & MEMORY

Fantastic documentary out to change the world. Visit the site, see Henry's amazing transformation, and help out. On the Web: http://musicandmemory.org/

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[1] The Beatles tune by this name was originally recorded in the key of C (no sharps or flats), but was sped up, putting it in the key of D^b (5 flats) to give it more pep, and to make Paul's voice sound younger.

[2] Kempermann (2013).

[3] Akbik, Bhagat, Patel, Cafferty, & Strittmatter, 2013.

[4] *This American Life* put together a band from *Chicago Sun Times* classified ads. Listen to the episode at http://is.gd/ayihil.

[5] Boyer, 2007, pp. 21-22.

[6] My study of older adults using GarageBand became a chapter in *Alternative Approaches in Music Education.*

Part Five

Wherever You May Roam

Practice Spaces and Places

There are no shortcuts to any place worth going.

Beverly Sills, soprano (1929-2007)

Pick-Up Notes

There are two aspects of "where." The first part has to do with context, an influential aspect of any kind of learning. The culture surrounding you, the global and the local zeitgeist, as well as the people and opportunities presented to you, all have an influence on your practice.

The second aspect of place is the practice space itself. What makes for a good practice space? The most important characteristics have more to do with the psychological nature of the space than its physical properties.

Chapter 22
Trash to Treasure

I prefer to accept only one type of power: the power of art over trash, the triumph of magic over the brute.
Vladimir Nabokov, author (1899-1977)

Growing up next to a landfill was cool. As a kid, I spent countless hours playing in my hometown landfill, enveloped by its yeasty stench, fascinated with the wealth of things people threw away. Also, you could break, smash, thrash, demolish, burn, and shoot things without fear of repercussions, more or less. These are important considerations when you're 11 and bored.

You could also *make* cool things out of the garbage, taking what once was trash and transforming it into art, something my brothers and I did long before it became known as *upcycling*. As kids, we pilfered from the landfill and sold some of the best recycled trash to summer tourists visiting on cruise ships for a handy profit. Turns out there's a good market for Alaska license plates stripped from junked cars.

When I learned of the Landfill Harmonic in Paraguay, it reminded me a bit of my childhood time in the city dump. Residents of Cateura, in Paraguay, have it much rougher than I did, though. In Cateura, a violin is worth more than a house. Cateura is a slum built on a landfill, and some intrepid and inventive folks within the small community filter the endless flow of garbage, upcycling some of what they find, selling it to make a living. Creativity in Cateura is a fundamental skill.

Nicolás "Cola" Gómez and music teacher Favio Chávez decided to take some of the trash and use it to create functioning musical instruments: violins, cellos, soprano saxophones, and flutes. Follow the link at the end of the chapter to see and hear them.

Nineteen-year-old Bebi Chavez plays cello and is proud to explain how his instrument was made. It was crafted from what looks like a battered 15-gallon red and white oil drum punched with ragged circular sound holes. The fingerboard was made from discarded wood, and two of its tuning pegs came from a beef-tenderizing tool and a gnocchi-making

machine. Bebi sits, settles the cello between his thighs, takes up his bow, and begins to play one of J.S. Bach's *Unaccompanied Cello Suites*. The sound quality of the oil drum cello will surprise you.

Another young girl echoes Nietzsche's famous quip when she says in Spanish, "My life would be worthless without music." It both breaks your heart and fills you with belief in the resilience and beauty of the human spirit all at once. The people of Cateura responsible for the Landfill Harmonic are a wonderful example of creative people's ingenuity transforming a challenging circumstance.

The inventive people of Cateura and the musicians who draw sustenance from their homemade instruments are exactly what researchers are talking about when they say that the lives of excellent performers are not a result of exceptional individuals, but come from exceptional circumstances. Where you live and who you're surrounded by matters.

Extension

Landfill Harmonic in Cateura

Learn more about the Landfill Harmonic in Cateura Paraguay, and help support the musicians. On the Web: http://bit.ly/1non8Ct

Chapter 23
Under the Influence

Tell me what company you keep and I'll tell you what you are.
Miguel de Cervantes, author (1547-1616)

1657 was a productive year for Dutch polymath Christiaan Huygens. He discovered the rings of Saturn and one of Saturn's moons using a state-of-the-art telescope he'd built with his brother; he published the very first book on probability theory; and if that wasn't enough, Huygens also received a patent for the pendulum clock he had invented the previous year. The pendulum clock brought about another discovery Huygens made that is the subject of this chapter.

The apocryphal story goes something like this: Before Huygens closed up shop for a long weekend, he wound up all the pendulum clocks hanging on his wall, and set them to tick-tocking back and forth, none of the pendulums swinging together. When he returned, Huygens was astonished to discover that all of the pendulums were perfectly synchronized, swinging together tight as Duke Ellington's rhythm section. Huygens had discovered what we now call entrainment, the tendency of things to vibrate at the same frequency.

Watch entrainment happen before your very eyes. Follow the link at the end of the chapter, or—even better—do the experiment yourself. Get two pendulum metronomes and place them on a short "bridge" resting on two empty soda cans laid on their side. Start the metronomes at the same tempo, but at different times so they aren't clicking together. Watch and hear them synchronize. Try different tempi and see what happens. Try multiples of tempo, like three metronomes at 60, 120, and 180. See what happens.

Rhythmic vibrations have a resonance that tends to synchronize the surrounding environment. It's a form of communication having nothing to do with lexicons or symbols, but is more fundamental. Entrainment happens all around us. You can see it on a dark summer night in the Great Smoky Mountains when thousands of fireflies congregate in a tree and synchronize their tail-lights to light up the huge tree with unison pulses of

bright green light.[1] You can hear it in a crowd at a concert when the random roar of clapping begins to gain a rhythm and coherence, especially if the performance was especially good. You feel it when a throbbing drumbeat begs you to dance, to move your body in synch with the rhythm.

This tendency of things to vibrate at similar frequencies isn't limited to the physical world, either. Synchronization extends into the realm of the psychological, though the mechanisms behind it are different, and not fully understood. It's the tendency of psychological or behavioral synchrony that can be a powerful influence on your music practice.

Physician and social scientist Nicholas Christakis has done several fascinating studies that illuminate the profound influence our social networks have on our behavior. According to his research, social networks influence a wide range of behaviors: obesity, smoking, drinking, and even happiness. For example, if your friend becomes obese, your risk of also becoming obese in the same time period increases by 57%![2] Where you are and who you hang out with matters.

Christakis says there are many ways this transfer can occur. One way is the spread of an idea, a meme; another is the spread of an experience of what it means to be "normal." If you're surrounded by people who exercise regularly, that's what you perceive to be normal, and this is likely to influence you to do the same. There is musical entrainment, too. Professional orchestral trumpeters Colin Oldberg and Ethan Bensdorf share an important connection along with a host of other classical musicians that is a great example of musical entrainment.

Colin Oldberg is an affable, unflappable guy who loves a good hamburger and plays trumpet very, very well. When I spoke with Colin about practice he was in Hong Kong, having earned the principal trumpet position with the Hong Kong Philharmonic Orchestra. He was about halfway through his first season as a professional orchestral trumpeter.

Colin's stint with the HKPO wasn't his first gig. While in college he'd already played Carnegie Hall multiple times, once as a member of the first YouTube Symphony in 2009 under the baton of Michael Tilson Thomas, and also when on tour as an extra member of the Chicago Symphony.[3]

Ethan Bensdorf is another young orchestral trumpeter who is a phenomenal player. Ethan won the Armando Ghitalla trumpet competition in 2006, played with the Chicago Civic Orchestra, the New World Symphony, and MusicNOW, Chicago Symphony's contemporary ensemble. Ethan's now in the trumpet section of the New York Philharmonic. He earned his spot by beating out hundreds of other hopefuls in a long and grueling audition process that you can hear about if you listen to his interview on music practice.[4]

Ethan and Colin were both students at Northwestern University, a school with a long history of fantastic orchestral trumpet teachers, including longtime Chicago symphony trumpeter Vince Cichowicz, and Ethan's and Colin's teachers, Charles Geyer and Barbara Butler.

Under Butler's and Geyer's expert guidance, Northwestern's trumpet graduates have earned spots in top symphonies around the world and have won major trumpet competitions. In fact, the New York Philharmonic associate principal trumpet position is held by Matt Muckey, another graduate of Butler and Geyer's studios. Chris Martin, principal trumpet in the Chicago Symphony is also a student of Butler and Geyer. They happen to be married, and their combined expert instruction is something of a one-two punch.

Both Colin and Ethan mentioned how inspiring and motivating it was to be a part of the Northwestern trumpet studio, surrounded by so many great musicians, not only their professors, but their fellow students, and all the superb performers who had been at Northwestern before them. Here's what Colin had to say about it:

> That was very motivating to me, as well. Not only their [Barbara Butler and Charlie Geyer's] teaching, but...the relationship and the environment that they cultivate there really works as a three-way punch almost, in that people are so motivated to do so well because there are so many people there ahead of them who have done well.

The trumpet studio wasn't the only high-powered, award-winning music studio at Northwestern; most are of similar caliber. The place is awash with accomplished, ambitious musicians who practice long hours to

hone their craft. The history of the place also has a resonance that shapes and motivates musicians.

You may not have ambitions to be a professional orchestral musician, but whatever music you want to pursue, few things are better for your progress than surrounding yourself with like-minded people. If you can inhabit a place where there is a long history of people doing great things, so much the better. It doesn't have to be an elite university; it could be a community music school like Chicago's top-notch Old Town School of Folk Music, or a loose affiliation of folk musicians who get together informally on a back porch or at a local open mic. If you're not lucky enough to live in such a place, a virtual community can give you a boost, too. You can find a group for just about any music online. Do it now. Start sharing and learning.

We are social creatures. In fact, there could be no learning at all without social networks. The vibrations of people, objects, and the culture surrounding us has a far-reaching influence, one that can be difficult to perceive because we soak up the influence unconsciously. Simply putting yourself in a beneficial environment will help, but there is a more direct way you can learn from those around you, covered in the next chapter.

Extensions

32 Metronomes Swinging Together

Here is mechanical entrainment in action: 32 metronomes synchronizing themselves. On the Web: http://bit.ly/1vFZK93

Ethan Bensdorf: NY Philharmonic Brass

Footage of the 9/11 Memorial dedication. The NY Philharmonic Brass plays Copeland's *Fanfare for the Common Man.* Ethan is the trumpeter on the far right. On the Web at: http://bit.ly/1koQ7GS

Colin Oldberg: Axiom Brass

Here's a video montage of excerpts from the Axiom Brass catalog. Colin is the trumpeter on the left. On the Web: http://bit.ly/1i4578P

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[1] Synchronized fireflies on the Web: http://www.is.gd/samoto.

[2] From Christakis's talk at http://is.gd/awazey.

[3] Hear Colin talk about practice at: http://is.gd/okarif.

[4] Hear Ethan talk about practice at: http://is.gd/kacayo.

Chapter 24
In the Zone

Every living being is an engine geared to the wheelwork of the universe. Though seemingly affected only by its immediate surrounding, the sphere of external influence extends to infinite distance.
Nicola Tesla, polymath (1856-1943)

Getting my ass kicked musically for over two years in a smokin' big band was difficult, and sometimes embarrassing, but it was an experience that forced me to stretch well beyond my improvisational ability at the time. The auditioned band was made up of music performance undergrads and other highly accomplished musicians from across Northwestern University, most of whom are currently music professionals in symphonies, studios, and in bands of their own.

A jazz big band has four sections: trumpets, trombones, saxes and the rhythm section (drums, piano, bass, and guitar). Generally, there is one person in each section who takes the improvised solos, the "jazz chair." After the auditions, I was chosen to play 2nd trumpet, also known as the jazz chair. This scared the crap out of me, because it was painfully obvious how well the other players improvised. I knew my own improvisation skills weren't even close to their level. I almost turned down the opportunity. It's no fun feeling like the weakest link all the time.

A similar experience ten years earlier playing Gypsy jazz with Jazz Farm reminded me that however uncomfortable I got because of my relative lack of ability, the experience would be a good chance to get better. I'd just learned about Carol Dweck's work on mindsets and was coming to terms with the fact that much of my fear stemmed from lingering beliefs that musical talent was a fixed trait, a belief that tends to make people avoid challenges. I kept telling myself, "What are you scared of? This will make you better." Playing with those musicians pushed me further than I thought I could be pushed. After two years and *lots* of practice, I was still the worst improviser in the group, but I was a lot better than I had been.

At the time, I was also learning about Russian psychologist Lev Vygotsky, and one of his ideas described my situation in the big band almost exactly. Vygotsky's ideas helped me make the most out of practicing with people who were so much better at improvising than I was.

Born in Russia in 1896, Lev Vygotsky was interested in childhood development, the psychology of play and art, how culture mediates behavior, and the internalization of learning, among other things. He was fascinated by the way we learn to communicate, both verbally and culturally, including the communication that goes on internally with ourselves, and the communication that happens externally with others. Vygotsky believed peer interactions are especially powerful, natural ways of learning, especially when those peers are more capable than you are, as in my example with the big band. Vygotsky called this learning space the Zone of Proximal Development.

Learning music is much like learning language, especially in musical traditions like jazz, pop, Indian classical, and many kinds of folk music in which you learn through imitation and assimilation, just like you learned language. In fact, learning language is one of the best examples of the Zone of Proximal Development. Vygotsky defined the Zone of Proximal Development (ZPD) as

> the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under [knowledgeable] adult guidance, or in collaboration with more capable peers. [1]

When a young child is learning how to speak, he or she is constantly in the ZPD. The kid is always trying to communicate with adults who have vastly superior amounts of practice at communicating verbally. The child gets constant feedback, not only directly in the form of correction or prompting, but also in dozens of indirect ways, from being misunderstood, to the facial expressions and body language of everybody she tries to talk with. The young child is immersed in the Zone of Proximal Development. It's one of the reasons we pick up a complex skill like language so quickly.

Take a look at this diagram of Vygotsky's Zone Proximal Development (ZPD).

Let's say you know a simple jazz tune on saxophone in the key of C, with no sharps and no flats. You can play the tune easily by yourself, even though you don't know the fingerings for most of the flat and sharp notes on the horn.

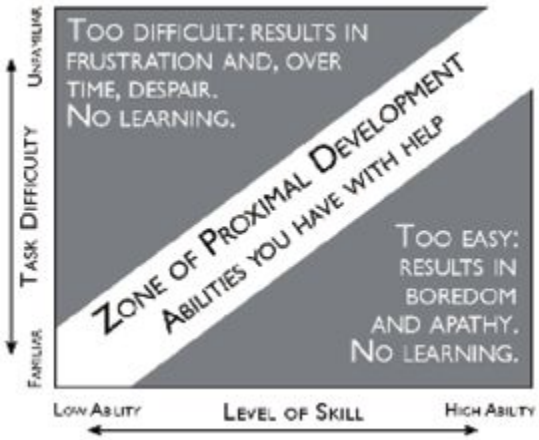
Now imagine you're in a band, performing the same tune with a singer, but she needs the song to be in the key of B^b, an unfamiliar key for you. You don't know the fingerings for the two flat notes in that key, so you can't play it very well. However, you're sitting next to someone in the sax section who *does* know the fingerings. Either by looking at her fingers, or by getting direct help with the fingering, you can play the music. It's a simple example, but in this case, you're in the Zone of Proximal Development. Interacting with a peer allows you to boost your skill.

In the same scenario, you're using written music to play the tune. That written music is a crutch, a kind of distributed cognition. You're using it to help you play the tune, because the music isn't memorized. Tools that give you an additional boost, allowing you to perform past your normal ability are known as *scaffolds*.

In construction, a scaffold allows workers to safely work on difficult-to-reach places, and it's the same here. A scaffold in the ZPD is a tool that helps to boost your ability, allowing you to reach beyond your current abilities. A scaffold can be a physical object like a piece of music, a fingering chart, or a metronome, but it can also be a psychological or mental tool, like the concept of the Zone of Proximal Development itself, or even encouragement or a word or two of advice from a more capable other.

This scaffold isn't meant to be permanent either. You want to internalize the music, so you memorize it, and gradually do away with the sheet music. Just like in construction, when the scaffold is no longer needed, it's removed, but gradually. This process is called *fading* in the ZPD terminology. The scaffold—the learning aid—doesn't just vanish, it's taken away slowly, giving you time to adapt and adjust as you begin to own the skill.

The nature of the Zone of Proximal Development is dynamic—it changes based on your ability, the ability you're attempting, and who's helping you reach beyond your ability. And of course, as you get better, what and who you need to continue getting better will change. Here's an illustration that shows the dynamic nature of the ZPD.



A good teacher is one of the best ways to fully harness the power of the Zone of Proximal Development, because a good teacher will know the state of your current skills, will know where you need to go, and most importantly, a good teacher will know what skills you most need to practice so you can progress to the next level. In addition to playing with you, which immediately puts you in the ZPD, a good teacher draws on a wide array of time-tested tools and techniques—scaffolds—to help you perform at a higher level. A good teacher also knows how to wean you of your need for the crutch (fading).

Some of the scaffolds good teachers use are hints, prompts, and cues, as well as specially designed group activities. Good teachers can also introduce you to behaviors you can use to scaffold your own learning (coming up next). And a good teacher will also know when to gradually

remove each of these tools as your practice results in growing independent ability.

Anyone who has taken a lesson with a good teacher knows about the less obvious kinds of scaffolding in the ZPD. It starts with general encouragement like, “Take it at the beginning of the ridiculously difficult passage, and go slowly.” And then you play the section and get specific directions on how to improve the passage. The specific direction could be to use an alternate fingering, or direction on how to make the passage more expressive, or a host of other suggestions. You try the passage again, and if you get it, great, if not, you’ll try again once or twice and if you *still* don’t get it, then you get a direct example. Sound familiar? If you’ve been ogling the extra material, you’ll recognize this is *exactly* what Samson Schmitt is getting from his dad, Dorado, during a lesson. The QR link is on page .[2] Watch it again with the ZPD in mind.

Here are a few things a good teacher will do promote a healthy Zone of Proximal Development:[3]

◊ Gain and maintain your interest in the task.
◊ Simplify the task.
◊ Emphasize certain aspects of the task that will help you “get it.”
◊ Help you control your level of frustration.
◊ Demonstrate the task.
◊ Play along with you when necessary.

An experienced teacher or peer has a broader perspective of what you can and can’t do, and because they have more experience, they often see a few different strategies you might use to gain the new skills. Even better, if that teacher or peer knows you well, they’ll be able to guide you based on what would best suit your personality and interests. You may not be lucky enough to have such a teacher (or any teacher at all), but there are some things you can do to bootstrap yourself into the ZPD when you practice alone.

The easy and most obvious scaffolds you can utilize to bootstrap your own learning are things like metronomes, video demonstrations, this book, and all of the suggestions in Part 6. Or take another look at the list of

things teachers do on the previous page and try to do those yourself. There are less obvious strategies you can call upon, too, like the mental practice strategies on page . Most of those you can do yourself, things like self-talk, which can help you to maintain interest, talk yourself through a tough spot, and help ease frustration.

Vygotsky believed that social interactions are rich, useful, and necessary learning environments. Sometimes musicians get so caught up in the practice room mentality, we overlook the massive practice we get when we play with others. Get yourself some of that sweet, sweet Zone of Proximal Development goodness by playing with other musicians who are better than you. Lots better. Those skills will rub off on you if you pay attention.

Extension

Scaffolding Your ZPD Knowledge

Wonder what Vygotsky looked like? More ZPD info with a Russian music soundtrack. On the Web: http://bit.ly/1tjZLh5

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[1] Vygotsky, 1978, pp. 85-86.

[2] Or use this link: http://is.gd/gexawa.

[3] Wood, Bruner, & Ross, 1976.

Chapter 25
A Shed of One's Own

A career is born in public—talent, in privacy.
Marilyn Monroe, actress (1926-1962)

Bae Il-Dong spent seven years singing into a waterfall. Singing into a waterfall is the preferred, time-honored way to strengthen your voice if you want to be a great Pansori singer. Bae Il-Dong lived beside the waterfall in a little hut he built himself in the midst of a beautiful Korean forest. He slept on the ground. The waterfall was a wash of white noise as it hissed down around boulders in the streambed. It's a loud sound. Some days Bae Il-Dong sang all day without stopping. Practicing like this earned him some seriously powerful pipes. His voice sounds like Kurt Cobain's at its loudest, but with better control, and more resonant overtones. Bae Il-Dong needs no microphone.

Imagine you're out for a walk in this Korean forest, and you hear the waterfall in the distance, so you head toward it. When you get there, you see and hear what appears to be a crazy man, squatting on his heels, his face pointed into the waterfall, his clothes soaked from the spray, rocking back and forth, screaming—or so it seems to you—into the waterfall. He might be playing a *buk*, the Korean barrel-shaped drum used in Pansori music; or he might be waving around a folding fan, an important prop in Pansori music, used by the singer to emphasize gestures. Unfolded, the fan signals a change of scene.

Practicing for eight hours or more is important in this tradition. Pansori songs tell a story, and a performance can last hours. *Song of Chunhyang* takes eight hours to perform, and there is no intermission.

If you actually did stumble upon someone screaming into a waterfall, you might quickly head the other way. That would be another benefit to the practicer: uninterrupted focus. It's the perfect place to practice if you're a Pansori singer. There is privacy, and the hissing roar of the waterfall provides not only a sound to test your voice against, it provides even more privacy: others can't hear you and won't be annoyed. Singing at the top of your lungs for eight hours or more in an apartment won't go over so well.

If you did that in most apartments outside of Korea, you'd probably end up strapped to a gurney and hauled away for psychological evaluation. At the very least, your neighbors would not be happy with you.

In his excellent book on classical music practice, *The Perfect Wrong Note*, pianist and teacher William Westney describes the need for privacy like this:

> The reason so many of us lose our bearings about practising early in life is that we practice in living rooms with other family members in earshot—and healthy practice would simply sound too obnoxious, intrusive, repetitious and unmusical for others to hear without annoyance.[1]

There are two kinds of privacy that a practice room of your own will give you: one is inward, and the other is outward. The inward privacy is the knowledge that nobody can hear you, allowing you the freedom to experiment with any sound you want without fear of being judged. But it's the long hours and the repetition that gets to others. In a private space, you can repeat something over and over and over again without fear of annoying anybody.

Don't assume the need for practice privacy will go away the better you get. Consider what the great composer Igor Stravinsky wrote in his autobiography:

> My family and I were quartered in a hotel in which it was impossible for me to compose. I was anxious, therefore, to find a piano some place where I could work in peace. I have never been able to compose unless sure that no one could hear me. A music dealer...provided me with a sort of lumber room full of empty Chocolat Suchard packing cases, which opened on to a chicken run.[2]

That practice room wasn't quite what Stravinsky was looking for, and he soon found another that suited him. Keep looking for a practice space that works for you.

The benefit of a shed of your own is that you get to explore sound without annoying anybody or feeling self-conscious. No matter how good you get, the exploration of sound is endless. Aural privacy will help you

explore sound more thoroughly, and will save others from having to participate in your explorations.

Tuba master Rex Martin tells a painful but funny story about annoying the neighbors. On a hot day, after a long morning of practice with the windows open, Rex finally left his apartment to run some errands. On the street below, as he unlocked his car, an older man approached him and asked, “Are you the tuba player?”

“Yes,” Rex said, believing the man might pay him a compliment, or say a kind word. Instead, the guy began screaming and swearing at Rex. The neighbor worked the night shift and needed some shut-eye. Rex said he “felt about this high,” holding up his thumb and index finger an inch apart. He expressed a feeling every considerate loud instrumentalist has felt. Rex said, “I don’t want to have that feeling like I’m bothering somebody.” As a player of several loud instruments, I know that feeling can be a difficult one to banish.

Rex’s home studio has been soundproofed with triple-pane glass, and cork, but the tuba sound has a long waveform that easily passes through just about everything, so it’s difficult to dampen the sound, especially a tone as resonant as Rex’s. It’s a good reminder that even a musician with gorgeous sound and superb musicianship can rub some people the wrong way.

There are lots of options, either finding a random option with chickens like Stravinsky did, or searching out a space dedicated to music practice. Tenor sax player Mike Lebrun and drummer Jon Deitmeyer have started The Woodshed, a shared space in Chicago where musicians can practice and teach without bothering the neighbors. There might be a similar place to practice where you live. Your shed doesn’t have to be a soundproof room, though, and you don’t have to pay for it.

Jazz grand-master Sonny Rollins stopped performing for three years early in his career to go deep into the woodshed so he could *really* get his chops together. He practiced on the Williamsburg Bridge in Manhattan’s Lower East Side for those three years, in all seasons, sometimes practicing 10-15 hours at a stretch.[3]

Your shed is where you make it.

EXTENSION

Intangible Asset No. 82

Drummer Simon Barker travels to Korea and meets Bae Il-Dong. Bae sings 25 seconds in. On the Web: http://bit.ly/RUm2Em

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[1] Westney, 2003, p. 111.

[2] Stravinsky, 1998, p. 57.

[3] Watch this interview with Mr. Rollins. It's golden: http://is.gd/xebara.

Part Six

Let's Get It On

Useful PracticeStrategies

The Buddhas do but tell of the Way;
it is up to us to swelter at the task.

Gautama Siddharta, sage, c. 563-483 BCE

Pick-Up Notes

This section covers some great information on how best to practice. I've only included techniques and strategies that aren't covered more thoroughly elsewhere. The section is split loosely into three parts: set-up, execution, and assessment.

As you move through the section, remember the difference between a strategy and technique. Strategy is an approach that just about anybody of any level can use immediately. Technique is the skill you need to get the most out of the strategy.

Chapter 26
Creative Practice

Creativity is a type of learning process where the teacher and pupil are located in the same individual.
Arthur Koestler, author (1905-1983)

Singer-songwriter Erin McKeown was the first musician who helped me to see how creativity is an integral part of good music practice. Erin's been a professional musician since 1995, when she was still in high school. Her second album, *Distillation*, received critical acclaim when she released it in 2000, and she's been going strong ever since, performing hundreds of performances a year, both nationally and internationally. What makes Erin's trajectory even more interesting is that she's one of the musicians who told me, "My experience with my instruments was not about practice for a long time. For many, many, many years, I did not practice."

If you've heard Erin's expertly crafted tunes or seen her energetic performances, you have clear evidence of her musical prowess. So how did Erin McKeown progress? How did she become good enough to play over 200 gigs a year and release nine albums, in addition to other successful musical endeavors? Songwriting played an big role.

Erin's example is particularly illuminating because she had a long, not particularly enjoyable practice history—over ten years of it—before she began to learn the guitar and to write songs as a teenager. Erin's parents required all the McKeown kids to play an instrument, and so Erin started playing piano at age three, and she practiced half an hour every weeknight until she was around 15, when singing and the guitar captured her full attention.

Erin remembered those enforced practice sessions as not being particularly enjoyable. In retrospect, Erin said she felt no emotional connection to the piano or its music. Then at summer camp in her early teens, Erin discovered that singing and playing guitar was a great way to connect emotionally with people through music, and she was inspired to do that. Eventually she abandoned the piano altogether in favor of the guitar and songwriting.

Deciding to play guitar and to sing marked the beginning of Erin's passionate personal engagement with creative music practice. Erin said she spent a lot of time alone in her room during her high school years, using a four-track recorder to write songs. One of the chapters in this last section of the book covers how to do this in more detail.

Crafting songs, constantly listening to what she was making up, assessing what she heard, and re-recording when necessary gave Erin a way to get better that didn't feel like practice at all. It was fun! But it *was* practice. The best kind: totally focused, totally engaged, deliberate practice; the kind of practice that makes time disappear. Because of her earlier experience of piano practice, Erin didn't identify that time in her room recording songs as practice. Who would?

Working with her voice and her guitar while songwriting was *radically* different from the kind of practice Erin had learned at the piano. Her creative approach to working with sound connected Erin to what she was doing musically, and that makes all the difference. Applying creativity in your own practice will help forge that connection.

Practicing creatively engages you with your material like nothing else can. Repetitively going over and over the same scale pattern on your instrument can certainly be helpful for basic technique and digital dexterity. However, engaging creatively with the material gives you *ownership* of what you're doing. Because you're the one creating the material, you're more engaged, and this engagement allows you to learn more deeply. Why would you not want to incorporate creativity into your practice? It's a lot more fun.

Infusing creativity into your practice doesn't have to be as ambitious as songwriting with a four-track recorder. Let's take playing scales as an example. The experience of many people with scales goes something like this: we learn a scale by playing it one octave from the bottom note, with an even rhythm. Maybe we'll get out a book and look up an exercise, or a teacher gives us one, and we practice that scale exercise over and over. If we're especially diligent or driven, we might do it in all keys, often looking at the sheet music the whole time. Ugh. No wonder people find practice unpleasant! The sooner you can escape from that boring, repetitious, "I'm-doing-what-someone-else-tells-me" mentality, the better. Abandon the sheet music as soon as you can.

Take control of the material by inventing your own patterns and your own ways of going through the notes. Why do you always start at the bottom of the scale and go up and down the scale with evenly spaced notes? Boring! Mix it up!

You'll probably invent many of the same exercises that already exist, but so what? Some experts might say that since they already existed, you're not being "truly" creative, but I say that's a bunch of hooey. If it's new to you, and you made it up, you're exercising your creative muscles. You automatically get ownership of the pattern because you *created* it. So what if someone else did, too. Great! It means you're on the right track. Creating your own exercises is more engaging, more fun, and produces better results in less time. What's not to like? Don't "be creative," just try some stuff and see what you like. Entertain yourself.

There are many other fantastic musicians who take a creative approach to practice. I haven't come across a good player who doesn't practice creatively, whether it's something as simple as a change of lighting or playing barefoot, or something more musically creative. New York Philharmonic trumpeter Ethan Bensdorf invents exercises as needed to address issues he's working on; singer-songwriter Nicholas Barron completely retuned his guitar so the fretboard would be unfamiliar and interesting to explore. The musician who is the most deliberately creative practicer I've spoken with is Ingrid Jensen.

Ingrid is a New York jazz trumpeter, originally from Nanaimo, British Colombia on Canada's west coast. Ingrid has been nominated multiple times for a Juno (Canada's version of a Grammy), and won the award for her album *Vernal Fields*. She's played with jazz legends like Clark Terry, Ron Carter, and Mulgrew Miller, plays regularly with the Maria Schneider Orchestra (including playing on their Grammy-winning album), singer Madeleine Peyroux and other musicians both nationally and internationally. Ingrid has frequently appeared in the top five *Downbeat* critics' poll as an artist deserving wider recognition. All this is my way of telling you that Ingrid has some serious chops and has worked hard to achieve and maintain them.

Ingrid said she deliberately incorporates a creative approach in her practice from the moment she picks up her horn. She said that one goal for her practice is to engage her listening and imagination immediately.

> In order to do that I have some really basic exercises I do that are all about getting my ear involved from the beginning. Not my brain or my thinking...but really using the imagination from the beginning.

Taking this creative approach makes a lot of sense, especially if you're an improviser. Ingrid continued, saying that

> our bodies and minds are constantly in a state of flux, especially as improvisers. Therefore it makes sense to me that we change [the warm-up] daily, making us more prepared to deal with the creative zone that jazz and improv are designed to take us into.

The foundation for Ingrid's warm-up is based on the music she'll be working on during the practice session. Ingrid said she'll often use drones to warm up, selecting a drone that is the tonic, or fundamental pitch, for the key she'll be working on. Then Ingrid can play any note against that tonic pitch and in that way she can hear and feel how those tones sound against the tonic.

Beginning the practice session by playing creatively with the tonic pitch is helpful, Ingrid said, because "in the warm-up, you're already immediately involved in the sound in a manner that relates to something you will be playing when it's time to play with people."

Ingrid said she starts by aligning her body, ears, and feelings with the moment and then begins to play sounds around the chosen pitch center. She said she might eventually add a beat to work on her rhythmic sense, or she might incorporate the tune she's working on and "develop the ideas in relation to that sound that's still going *dronedronedronedrone*." Ingrid said sometimes she'll also play that melodic material against the drone with an Elvin Jones drum feel or an African triplet or an Indian tabla groove, or a 7/4 meter or will even work on just playing even eighth notes in 4/4 time. She said, "So you have a drone and a pulse going, and between those two things, there's a lot of music to be made."

Ingrid's creative approach to the material she's working on extends throughout her session. When we spoke, Ingrid had been preparing some

challenging music for Darcy James Argue's killer big band Secret Society. Ingrid said that she often will take her practice material and

> really get it together as it's supposed to go, but also explore with it. Take it down the road, take it for a walk around the block, climb to the top of a building, and come back down with it and then come back and play it exactly as it's supposed to be as well.

The topic of creativity could—and does—fill dozens of books, but here are a few quick-and-dirty tips that will help you to bring some creative strategies to your own practice.

Constrain Yourself

Unlimited possibility can quash your creativity, as in the direction to "be creative." That's such a wide-open statement that it's worse than no direction at all. What we need is a picture frame to block out just about everything else so we can actually *be* creative. That's what the following suggestions are: they're like blinders you put on a horse so it doesn't go bug-nuts from all the surrounding activity.

There are many famous examples of constraints giving a boost to creativity, whether it's Dr. Seuss's bet with his publisher that he could create a book using less than 225 words (he did it with *Green Eggs and Ham*, 50 words), or Piet Mondrian's constraint of using only straight lines, 90 degree angles, and primary colors; or Ravel composing Bolero by using one musical phrase repeated over, and over, and over, and over. And over.

When my free improv group *Meh!* would get together for some free improvisation, constraints were essential to making interesting music. Sometimes the constraint was broad, like "play the color yellow," and sometimes the constraint was very specific, like "only short notes in the key of e minor." Without these constraints, there are simply too many possibilities, and that can be crippling. A constraint is like a sandbox you get to play in. Constraints work. Rocker Jack White talks about the power of constraints at http://is.gd/itolox.

Fear & Apathy Are the Mindkillers

Creative people are often playfully irreverent when they're coming up with ideas. Try to maintain a sense of play when you're working through a problem. For example, do something silly with your instrument

while you're working through a tough section. Sometimes I'll turn my horn upside down and use the back of my knuckles to press *up* on the valves, instead of doing it the usual way. Sometimes I use my left hand on the valves instead of the right. I once tried to play my horn under water, but taking a breath was problematic. Get silly. It's fun, and mixing it up can help you break through blocks caused by fear, apathy, or boredom.

Hans Jensen sums up the need for creativity to combat boredom in practice pretty well when he says,

> I've found the most important thing for me is to have fun. So even if I have to do the same thing, day after day, I try to do it from a different perspective. So I think it's very important. I try to teach that, actually, from the young student to the older student; trying to find creative ways of doing things that are actually tedious. Because a lot of what we have to do can be kind of tedious, so if we can find a creative and fun way of doing it, then it seems like it's a new experience.[1]

When we become anxious, or apathetic, or generally think too much, it kills some of the creative powers of the mind. Maintaining a sense of play, of love, of irreverance, and of exploration can restore or jump-start a more creative approach to your practice.

Get Two-Faced

One way to approach material from a different perspective is to use what some call *Janusian thinking*. It's a creative strategy that works by looking at a problem from opposing viewpoints. The technique was identified by psychologist Albert Rothenberg in the 1970s, who named it after the many-faced Roman god Janus. Rothenberg interviewed highly creative achievers in the arts and sciences, including Nobel laureates and Pulitzer Prize winners, and he noticed these creative individuals often used Janusian thinking to foster creative insight.[2]

Rothenberg found that composers used the technique to play with the construction of a composition. In your practice, if you've got a difficult passage, play it backwards (in music theory this is called *retrograde*). Playing something backwards is easiest if you can read music, but check out Erin McKeown's interesting example of singing backwards in the link at the end of the chapter.

You could also play the passage “upside down” (called inversion). All the intervals in the melody are the opposite interval (for example, a minor third—e.g., C to E^b—turned upside down becomes a major sixth—E^b to C). Inverting a musical passage is probably easier to do using written music.

But take the creative use of opposites one step further. If you’re struggling through a fast classical passage, play it ridiculously slowly in a punk rock style. If you’ve got a tough blues lick, play it as if Mozart or Bach wrote it and it’s being conducted by Michael Tilson Thomas. Get crazy like a fox.

Distance Makes the Heart Grow Creative

Psychological distance can also boost your creativity. Imagine that a problem you’re facing is something everyone encounters, and that it’s your job to find a solution to help others work through the same problem. Or imagine your techniques will be put in a method book or in a helpful YouTube video. How would you craft an exercise (or whatever you’re working on) so a beginner could play it?

One study[3] found that when participants thought their ideas would be used by others, they came up with more creative ideas. Another study[4] found that temporal distance boosts creativity. Imagine yourself a year from now. How would that future self approach a problem in practice, or practice in general?

What Would Dizzy Do?

Imagining how someone else tackles a problem can boost your creativity. It’s best to choose someone you admire, someone you know about. I chose jazz trumpeter Dizzy Gillespie here because I admire his creativity, his wit, his sense of humor, and his amazing musicianship. If I’m stuck with a musical problem, I’ll try to channel a musician like Dizzy to jump-start a solution to a problem in my practice. For example, if I’m trying to practice improvising over an unfamiliar chord change, I might call on Dizzy’s example of using bebop scales. A bebop scale has extra passing tones in it so that when you play the scale, the chord tones land on the beat. Who you choose to emulate should be somehow related to your problem, even if the relationship is only in your mind. Sometimes

imagining yourself to be a more generic character can be even more effective.

My wife and I were learning Jimmy Grafton's *When Santa Got Stuck Up the Chimney* for a family talent show. It's a funny song, but the melody is tough, with a big leap in the first phrase. We were both having trouble with it, but then, remembering a silly song from camp, Michelle said in a sing-song voice, "Second verse, same as the first. Opera style but a whole lot worse." She then proceeded to sing it "opera style." It was the first time she absolutely *nailed* all the pitches and the big melodic leap. Imagining herself to be an opera singer, even if only in a silly way, gave her immediate access to singing the pitches correctly. It's weird how well this trick works.

Another great example comes from deaf percussionist Evelyn Glennie (yes, you read that correctly). During a TED talk, Ms. Glennie demonstrated how she would play a passage if she imagined herself as a "technician." The playing was flawless, and not uninteresting. Then she played it again and said, "When I think of myself as a musician..." and proceeded to play the passage *much* more musically, producing sounds that were more artistic, more interesting, and generally much better.[5] The power of imagination allows you to access superior abilities in your practice, abilities you might have believed were beyond you. Try it.

Find a Lennon for Your McCartney

Sometimes your practice really needs is a partner: someone not only to bounce ideas off, but someone who can tell you honestly that you're just not cutting it, or someone to give you a bit of a competitive nudge. Getting together regularly with another person to practice can be especially helpful if that person is more capable than you are, even if it's only in your mind, like the relationship between *Bad Religion* members Brett Gurewitz and Greg Graffin I mentioned on page . Whether it's a competitive relationship, or an intensely collaborative one, like John Lennon and Paul McCartney's songwriting relationship, getting together with another person to practice can give your creativity a nice boost. At the very least, another person will give you a fresh perspective on how to practice.

Your creativity is like a muscle: use it regularly to nurture and strengthen it. In addition to the simple strategies I've mentioned here,

there are dozens of books that will help you understand and nurture your creativity.

If you bring aspects of creativity into your practice routine, you'll find yourself more connected to what you do in the practice room, and you'll get more enjoyment from your practice. Engagement and enjoyment will sustain your practice for the long haul.

Extension

Making *Proof*, Erin McKeown

Erin had to practice singing this song backwards and double speed. If that's not proof of creative practice, nothing is. On the Web: http://bit.ly/1m4C5Kn

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[1] From *Taste the String* on the Web at http://is.gd/enaquk.

[2] Rothenberg, 2011.

[3] Trope & Liberman, 2010.

[4] Förster, Friedman, & Liberman, 2004.

[5] This link takes you directly to the spot where Ms. Glennie demonstrates this strategy: http://is.gd/xinejo (6:54).

Chapter 27
Practice Anatomy 101

Anatomy is destiny.
Sigmund Freud, psychologist (1856-1939)

Whether you're writing a novel, composing a piece of music, living a life, or getting some music practice done, a beginning, a middle, and an end are essential to the process. Waltzing into the practice room, practicing some stuff, and sauntering off will probably increase your skills, but if you want to get a *lot* better a *lot* faster, think of every practice session as having a beginning, a middle, and an end. Like a story, in a good practice session each part both influences and is influenced by every other part.

It's also a good idea to keep in mind the saying, "Everything in moderation, including moderation." This chapter covers the *general* structure of a good practice session and general strategies that great musicians use. Now and then that means you ditch the preplanned, goal-setting, overthinking aspects of practice and just have some fun. This should happen *lots* more if you're a beginner. Sometimes it's great to forget the agenda. Jazz drummer Allison Miller, self-confessed lifelong practicer and stickler for drum rudiments, said sometimes she'll go into a practice session to "completely turn off, and approach the drum set trying to not play anything I've ever played before and see where it goes."

But for the majority of the time, to get better faster, you have to be deliberate about what you're going to do. This chapter is all about how the best players approach a single practice session. Adopt these approaches and your playing will get better so quickly it might surprise you.

Setup

To squeeze the most juice out of a practice session, you need focus, and for that, you need some privacy. Ingrid Jensen actually hangs a "Do Not Disturb" sign from her practice room door. She said, "If I'm not going into some kind of a trance space, or [doing] something that gets me focused on something besides what's outside my head, or outside my body

—distractions—then I have to re-evaluate the process, or get those things out of the way." Avoid distractions by turning off your phone and stepping away from the computer or other electronics. You might need them for some practice sessions, but it's best if you limit their use.

Another thing that will be of immense help to your ability to focus is to keep it simple. There are probably thousands of things you need to practice, but you need to pick just one. One thing is enough for a practice session. Ingrid Jensen said:

> I set up situations in my practicing that make it feel like I'm doing one thing, and I actually am probably doing more. As musicians, no matter what we're trying to do, we are multitasking, because our body and our ears and our fingers are involved in a number of things while we're learning. When I get the most done and I have the best practice time it's when I really isolate an area of the music I need to work on.

Before you start, take a moment to go over what you want to accomplish. Identify the most challenging parts of the music and focus *only* on those, not the whole song. This is a common mistake beginners make. Forget the easy stuff. You're after efficiency, and this means tackling the tough stuff. Don't waste your energy on what you already know how to play. Sure, it's fun, but the clock's ticking. At first it might help to write these challenging spots down to help you keep track. Nothing fancy, just a few lines of text.

The reason the setup phase is so important is that when you know what you're going to work on, you can create a practice session—from warm-up to cool-down—so everything you do is focused on that one goal.

If approaching practice in this way is new to you, it might seem awkward and time consuming at first. If you keep at it, thinking about practice with this kind of focus will soon become a habit you don't have to think about much at all.

Execution

In general, a good practice session is broken down into three parts that are similar to the three parts of this chapter (again with the fractals). The three parts of the practice session are:

1) Warming up the brain/body (around 5%-10%)

2) Intense focus on reaching the goal you've set (around 60%-75%)
3) Music (around 20%-30%)

Here's an opportunity to exercise your creative muscles in your practice. You should create a practice session that is internally consistent, so that these three parts are connected. The warm-up, exercises, and playing of the music all reinforce and reflect each other, so the skill you're trying to master suffuses the whole practice session. Relating the warm-up, technique work, and music you're going to perform is a constraint that should help to create a practice strategy.

For example, let's say you've got a very fast passage in the key of D that needs work. It could be double-tonguing if you're a brass player, or sweep picking if you're a guitar player, or a tricky cross-fingering on piano. In addition to warming up in the key of D, you can do double-duty by warming up with slow, deliberate focus on *exactly the same* articulations or pick strokes, or fingerings, or whatever is required for the fast passage. Orchestral trumpeter Colin Oldberg said he often does this with first attacks, a skill that he monitors closely. You could choose the passage itself to warm up with, but play it in a comfortable octave *ridiculously* slowly, maybe with a drone, a strategy I'll introduce a few chapters from now.

When you've finished working intently on the technique you're trying to learn, towards the end of the practice session you'll want to incorporate the work you've done into the actual piece of music. Back up a ways and play through a larger section that includes the section you've been working on. Hopefully, you'll notice some improvement. The section might not be perfect yet, but it will be better. It's those incremental improvements that eventually add up to become talent. Once you're done playing, there is one last vital component to a good practice session.

Assessment: How Did It Go?

Take a few minutes at the end of the practice session to assess how well you achieved what you set out to practice. This part will be difficult or impossible if you came into the practice session without a goal. Again, it doesn't have to be some complicated process. Just think back and take stock of what you did, what worked, and what didn't.

This assessment of the practice session is a great time to think about your plan of attack for the next practice session. Again, keep it simple, and jot down your thoughts if it will help you remember for the next session. This way your practice sessions will overlap and feed off each other.

Hemingway used to stop writing in the middle of something, sometimes even in the middle of a sentence or paragraph, so that when he returned to the writing desk, he could just dive right back in and easily pick up where he left off. Reviewing the practice session and generating ideas for the next practice session are kind of like Hemingway's approach. If you do it, you can jump right in on the next practice session because you've already primed the pump.

Chapter 28
Stare with Your Ears[1]

Knowledge speaks, but wisdom listens.
Jimi Hendrix, musician (1942-1970)

The opening chord of the Beatles tune *A Hard Day's Night* might be one of the most recognizable chords in pop music. It's got a wonderful jangly, wavering sound that leads like fate into the opening verse. Musicians have wondered about that chord since the tune was released in 1964. When you're a musician, you listen differently. You stare with your ears. Especially when you want to figure out a song.

The opening chord of *A Hard Day's Night* has been stared at over the decades by countless musicians attempting to figure out exactly how that chord is played. Lots of theories have been put forth, including a Fourier analysis of the chord. The mystery was solved when Sixties rocker Randy Bachman got an exclusive invite from Giles Martin to visit the inner sanctum at Abbey Road Studios, where the Beatles recorded most of their music.

Martin told Bachman that all the original Beatles recordings had been put into the computer, so any individual part from the entire Beatles catalog could be called up with the click of a mouse. Martin asked Bachman, "What do you want to hear?" After some thought, Bachman chose the chord that opens *A Hard Day's Night*. He listened to each track separately, and because of all his practice staring with his ears, he easily figured out what the chord was.[2]

Through the wonders of technology, we live surrounded by ghosts. It's not unusual in one day to hear the music of those long gone, whether it's John Lennon, Louis Armstrong, Django Reinhardt, or Tupac. We can watch Jimi Hendrix light his guitar on fire.

Recording technology was a game-changer for anybody who wants to play music. Chief sonic architect of the Rolling Stones, Keith Richards said:

> I've learned everything I know off of records. Being able to replay something immediately without all that terrible stricture of written music, the prison of those bars, those five lines. Being able to hear recorded music freed up loads of musicians that couldn't necessarily afford to read or write music, like me. With recording, it was emancipation for the people.[3]

For a musician, hearing is to *listening* as looking is to *seeing*. Most of us can hear, most of us look at things, but it takes a specially focused effort to *listen*, or to *see* more deeply. It's a focus that allows us to perceive what lies beneath the surface, and it's the kind of focus you *have* to bring to the practice room.

As a musician, when you listen to music, it's not a passive act; you're fully engaged in the experience, almost swimming around in it, perceiving detail and depth that casual hearing just can't pick up. The way musicians listen to music is both more intense and more purposeful than the way "normal" people listen, especially if you're listening to music you love, or music you want to learn. Tabla player Rupesh Kotecha calls it *intricate listening*, New York Philharmonic trumpeter Ethan Bensdorf calls it *active listening*, free-improvising pioneer and composer Pauline Oliveros calls it *deep listening*. Whatever you call it, listening this intensely takes practice.

Sona Jobarteh said one reason she started to listen carefully like this was born out of boredom. Sona is the sole female kora virtuoso in the world, and she comes from a Griot family from Gambia, in West Africa. The kora has 21 strings and is similar to a harp. The strings are strung on top of a huge calabash gourd that helps the plucked string to resonate. The kora player has to play bass lines, harmonies, and melodies all at once. Sona sings while she plays, too.[4]

Sona's teacher helped her learn to listen carefully. She teaches her own students the same way, by focusing on playing one part until it's automatic, freeing up your ears to roam around and listen while you play. Sona said,

> Learning kora is all about starting with the bass line, with real basic, basic things. Even when you're ready to add a lot more, you still don't, because as soon as you start to add more, you're occupied with

> what you're playing instead of listening.... The whole point of it is that you're so bored with what you're playing that you're forced to listen to what else is going on.

Musicians from all traditions can tell you about listening across the ensemble, and about hearing inner voices, not the ones in your mind, but the inner voices of chords. As you develop listening skills, you'll be able to hear across the ensemble—whether it's a power trio or an orchestra. You'll be able to isolate individual instruments. You'll be able to pick out melodies, harmonies, and rhythms those other instruments are playing. There is some pretty solid science-based evidence that musicians are better able to hear the upper notes of chords, are better able to hear emotion in babies' cries, and are better at overcoming the "cocktail hour" effect, able to isolate a speaker's voice from the background noise of general conversation.[5]

Hear Training

The important thing about hear training is that it's not just hearing, it should also be *doing*, making those sounds yourself. Hear training isn't just training for your ears, it's the ability to hear what's going on and being able to reproduce it, either on your instrument, with your voice, or both, which is best. Singing is essential. If you can sing a melody line or an interval you've heard, that means you *own* it. It's a form of embodied cognition: you're using your body to demonstrate how well you hear and understand a musical line. Singing, humming, or whistling a line you're trying to learn will *immediately* reveal what you can hear, and what you can't. If you can't sing it, you can't really play it.

Melodies are the best way to start working on your hear training. Memorize melodies on your instrument and with your voice. You probably already can sing or hum dozens of songs. If you can sing a tune, try to play it on your instrument. Forget the written music. Use your ears, not your eyes. Music is aural, not visual.

Think of the melody as the surface of the ocean. It's easiest to see, and you can trace its ups and downs with little effort. The next easiest feature to see (at least if you have sonar) is the ocean floor. In our musical metaphor, this would be the bass line, which might be played by a string

bass, a tuba, a bass clarinet, or just about anything. After you've got a melody memorized, while you play, focus on the bass line. This could be a challenge if you're listening to Flea or Charles Mingus or Victor Wooten. A musical score or a lead sheet with the root notes written right there in plain view can be helpful when listening for the bass line.

After you can focus your hearing on the melodic surface and the bass line at the bottom, start to listen for all the voices in the middle, too. First, take a broad view, listening to the whole group, whether it's a power trio, a show choir, or an orchestra. Then focus in more closely, but just on one thing at a time. If you're in a large group, it could be all the trumpets, or the violas, or the altos. Then focus in more deeply, on just one player. Can you? Can you stare harder with your ears, and pick out one note in a chord, like a piano or guitar chord?

Only after you've memorized lots of melodies and worked on stretching your hearing awareness to listen throughout a complex soundscape should you start to work on more academic types of ear training, and then only if you're inclined—or forced—to do it. Most ear training to be found online and in undergraduate music programs involves interval identification and chord-type identification. Though I've gone through (and taught) this kind of ear training, now I don't think it's as useful as it seems like it should be. The musical contexts and the emotional resonance created by these sounds are more important than the name of the interval or the name of the chord. Focus on the more important qualities first.

If you can repeat a sentence someone just spoke to you, you're essentially doing the same thing as listening to a melody and recreating it on your instrument. Of course, it's a challenge to recreate a sentence *exactly*, with all the inflection and emotional resonance of the original. It's the feelingful nature of a great sound that is most difficult to emulate, but if you stare with your ears long enough, you'll get it.

Extension

Evelyn Glennie on Listening

Thought-inducing talk on listening by Ms. Glennie, a professional percussionist who lost her hearing around age 12. On the Web: http://bit.ly/1k5owuO

[1] I wish I could claim this phrase, but Ken Nordine thought it up. Check out his fun *Word Jazz* performances: http://is.gd/qapabu.

[2] Hear Bachman tell the story and get the chord details: http://is.gd/ijimap.

[3] Richards, 2010, chapter three.

[4] Hear and see the kora as Ms. Jobarteh plays and sings her song, *Jarabi*.On the Web: http://is.gd/apukes

[5] Kraus & Chandrasekaran, 2010.

Chapter 29
Imitation Station

The human is indissolubly linked with imitation: a human being only becomes human at all by imitating other human beings.
Theodore Adorno, sociologist/musicologist (1903-1969)

Forty thousand years ago, before YouTube, one of our Paleolithic ancestors learned how to play a bone flute. The ancient flute was crafted from the hollow wing bone of a large vulture, and its holes were perfectly drilled so the flute could play a pentatonic scale, a group of five notes used in cultures worldwide, a group of notes that will sound familiar to you.[1] The flute was discovered along with astounding cave art and other Paleolithic treasures in *Hohle Fels*, a cave in the Swabian Alps in southern Germany.

Archeologist Maria Malina describes the flute in Werner Herzog's documentary *Cave of Forgotten Dreams*. Another archeologist, Wulf Hein, clothed in animal hides, plays us some notes on the flute, then launches into an airy version of *The Star Spangled Banner*. You can bet your life that whoever learned to play that flute learned by imitating another player, probably a shaman. Imitating is how we learn best.

We humans are imitation machines. We're hardwired for imitation. Remember the mirror neuron system? For countless generations, the only way to imitate was to be in the presence of another human being, so you could see and hear what they were doing and copy them. In the last 100 years, this requirement changed drastically with the advent of recording technology, first the phonograph, and many subsequent music playback inventions that allowed you to purchase the Beatles catalog in yet another format. Technological advancements over the past 100 years have done more to help musicians learn music than at any other point in human history.

Imitating musicians by ear is similar to how you learned to speak, but with music it's more intentional, and you're more intensely focused on the imitating. Ingrid Jensen said you have to "virtually match note-for-note:

length of note, quality of note, *everything.”* At some point, as you absorb the other person’s performance, your own sound will disappear into the music of the person you’re imitating. It’s a cool feeling.

Imitating using sound alone is a challenge. You can’t see the musician, so you have to guess at fingerings. Jazz trumpeter Clark Terry calls it “fishing for fingers.” And one of his students, Ingrid Jensen, said that to do it, “You just keep fishing; you put the record back to the beginning, rewind the tape, rewind the mp3, whatever, *until you get it!* And then when you get it, you *know* you’ve got it because it sounds like one voice. There is all the technique you’re gonna need.”

Since 2005, we’ve witnessed the beginning an even greater explosion in musical learning, a learning explosion on a global scale, and not limited to music, by any means. I’m talking about YouTube, of course. Now you can hear *and* watch master musicians do their thing. But wait, there’s more.

The prime benefit of learning to imitate with technology is that you can’t annoy technology. A request to repeat something for 200th time at half speed is as simple as a click, no emotional baggage required, other than your own. It’s also ridiculously easy to slow down an example with technology. On YouTube, you can slow a video to half speed. With other programs, you can slow music down by any percentage you desire. I’d like to show you two of the most powerful computer-based tools for imitation, both of which are free (if you own a computer or smart phone). I’m talking about Audacity® and Soundslice. Audacity is an imitation tool for audio, and Soundslice is an imitation tool for video.

Audacity: Recording & Playback

Audacity is a powerful piece of free, open source software that allows you to manipulate audio in a number of ways. For learning music by ear, it’s great, because you can take a very small snippet of sound, loop it, and slow it down by as much as necessary.

You can change the key, too, which is helpful if you need to put a tune into your vocal range, or if you need to learn a tune in another key. I’ve

uploaded nine Audacity tutorials to YouTube to help teach you the most useful tools for imitation. It's quite easy. Watch them at http://is.gd/esuvux. Audacity is one of many free tools created from the open source movement. It's available for any platform, totally free, with no embedded ads of any kind. At http://audacity.sourceforge.net/.

Soundslice: Video Learning Goodness

Soundslice is a free website running software created by Chicago guitarist Adrian Holovaty. Soundslice allows any user to transcribe a YouTube video with its intuitive tools. The platform is geared towards guitarists, and it's especially helpful for players who don't read standard notation. Standard notation features are in the latest update. It works best on a desktop machine, in my experience. Soundslice is a game-changer of a program. Really.

You can use Soundslice to learn tunes that others have already transcribed (hundreds in many genres and more every day), or you can transcribe your own favorite. You can slow down a YouTube video by half, tap to enter measures, repeat sections, and enter fingerings. Transcriptions are shared, too, so we can all learn from each other's work.

Adrian Holovaty transcribed *Bistro Fada*, the theme song to *Midnight in Paris*, a waltz written by Stephane Wrembel. Check out *Bistro Fada* on Soundslice at http://is.gd/fufego.

Before technology like this, people would wear out phonograph needles and vinyl records by playing a tune over and over and over again as they learned it. To slow down a fast passage, you could gently put your thumb on the spinning disc to slow the revolutions and the passage. Unfortunately, this also lowered the pitch, and you had to apply consistent pressure or the pitch would fluctuate. Both Audacity and Soundslice allow you to slow the tune down without changing the pitch.

Imitating the notes, though challenging, is really the least difficult part of the process. What you're *really* after when you learn by ear is imitating the nuances of feeling the player puts into those notes. Those are aspects of the music that written notation will *never* be able to show, and

that's why learning by ear is such an important addition to your practice, no matter what kind of music you want to play.

Imitating is just a tool, an exercise. When it's your turn to do your thing, create your own material, whether it's an improvisation, or a personal interpretation of a melody. Ingrid said, "I don't want them to hear me play 18 bars from a Freddie Hubbard solo. They know how that goes! I remember hearing somebody do that once and I thought, wow, that is the *opposite* of jazz."

After you've used imitation to learn, when you get out there to show folks what you've got, show your own stuff. *Do* something with those sounds you can make. Don't recite somebody else's poetry; tell us your own story. Show us who *you* are.

Extension

Wulf Hein Plays a Bone Flute

In this clip from *Cave of Forgotten Dreams*, you can hear a replica of the 40,000-year-old flute made from a vulture's wing bone. On the Web: http://bit.ly/1pd1TVm

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[1] Bobby McFerrin, in his signature playful style, demonstrates the universality of the pentatonic scale: http://is.gd/ifawev.

Chapter 30
Drone Power

Simplicity is the ultimate sophistication.
Leonardo DaVinci, polymath (1452-1519)

"What can you do with only one fold?" The question came from a student of origami artist Paul Jackson. "Nothing," he said immediately. What kind of question is that? Seriously. Origami is all about creating complex shapes with multiple, intricate folds. But the question stuck with Jackson, and after he'd thought about the question for a while, he began to play with single folds. The results of Jackson's one-fold experiments are interesting; they have a simple, elegant beauty. He said, "You don't need to have a very strong knowledge of origami technique to make something beautiful that you feel is in some way significant and interesting."[1]

In the same way, you don't need a knowledge of music theory or advanced instrumental techniques to take advantage of a simple, powerful strategy that will unlock a great deal of creative interaction with sound, interactions that will also train you in one of the most essential musical skills, one almost entirely neglected by beginners and teachers: playing in tune.

The musical analog of one fold in origami is one long, unbroken tone. A drone. Just as the sheet of paper is the medium on which the single fold is expressed, so too is the long drone the backdrop on which you can apply your own tones to create interesting sonic variations. Using drones and long tones can be meditative, even trance inducing.

Drones and the instruments that create them appear in music all over the world, whether it's the Australian didgeridoo, Scottish bagpipes, the hurdy-gurdy, the Crwth, or the tanpura in Indian classical music, or dozens of others. The drone is a tone that sounds continuously underneath melodic lines and rhythms in the music. It's the tonic, the fundamental pitch of the piece of music. The tonic is the musical equivalent of home base.

Attempting to merge your sound with the drone is a valuable exercise. Having listened to countless student performances in various

music festivals around the country, I can reliably tell you that one of the most common problems players have is the inability to match pitch. It's too bad, because correct intonation is necessary for a great performance. [2] But playing in tune is harder than it sounds. Playing in tune takes practice. The good news is that the practice can be fun.

Music teachers constantly remind students to "play in tune," and students are often required to use a tuner in order to set their instrument to the right pitch. But unless you play piano or guitar, setting the pitch in this way helps very little. Looking at a tuner might help you get your instrument in the ballpark, but if you want to actually play ball, you have *listen*.

Using a tuner to adjust your pitch is like a painter chewing crayons to find the right color. It's a mismatch between the sense you need and the one you're using. With a tuner, the eyes are engaged, but the ears just sit there slack-jawed. A tuner isn't helpful to a person who needs to engage their *hearing.*

Forget the tuner. Playing in tune with a drone is a *physical*, *feelingful* way of understanding intonation. After surprisingly little practice, adjusting to be in tune with a drone is kind of like slipping on the ice. You don't stop to think, your body simply reacts instantly, without conscious thought. After some practice with drones, you'll adjust your pitch to be in tune with little or no conscious effort. This is "thinking in music."

When playing with a drone, you can easily hear when the pitches don't match, especially if you're playing the same note as the drone (unison), or fourths and fifths. But you can (and *should*) hear and feel all other pitches and dynamic variations against that drone. The challenge is to learn how to adjust your instrument on the fly to match the pitch. It's different for every instrument, but that's mostly just mechanics; the trick is hearing the difference in the first place.

Jazz trumpeter Ingrid Jensen introduced me to practicing with drones. She said she uses drones a lot in her practice, using either a tanpura or a piano with the sustain pedal held down. Like any good idea I come across, I tried it, and now I'm totally hooked. After only a week or so, I noticed a marked improvement in my ability both to perceive and especially to match pitches on my horn, a skill I thought was already solid,

because at that point I'd been playing trumpet for over 30 years! Over two years after adopting drones in my practice, I love playing with drones more than ever.

Playing with the drone will help you become aware of where your instrument is naturally out of tune, whether because of the way the instrument is made, because of the quirks of the harmonic series, or due to the varying demands of tuning different parts of the chords. The details of tuning could take up a book on its own.

Here are a couple examples that the best musicians know very well. Most instruments have notes that are chronically out of tune: low C# on trumpet, C# on saxes, clarinet throat tones, etc. If you don't know what those notes are on your instrument, practicing with a drone (and a little homework) will be a great help. Harmonically, the third of a major chord often needs to be slightly lower in order for the chord to be perfectly in tune. Knowing these facts intellectually is not as useful as *feeling* them when you're in tune in these situations. One of the easiest and most fun ways to sense these intonation challenges is to play with a drone. Unless you have a friend who plays bagpipes, didgeridoo, tanpura, or some other drone instrument (and is willing to come play with you), you'll have to create a drone mechanically. A piano with the sustain pedal down works fine, though it can be awkward, especially if you play a large instrument. I prefer to create a drone using the Indian instrument called a tanpura.[3]

The tanpura has four or five strings, and each string is set to a particular pitch. The strings are usually tuned in unisons, octaves, and fourths or fifths. Tuning the tanpura in this way creates an interesting sound that is rich with overtones, making it a great drone to practice with.

But maybe you live in rural North Dakota, or in the Alaskan Bush, where no road connects you to the rest of the world. How are you going to find a tanpura player if you live in Egegik? With a smart phone, you can easily harness these drone instruments to practice with. One of the best drone apps available was made by Prasad Upasani. Remember him from chapter 1? He introduced the idea of *samskara*, unconscious influence in practice.

Prasad is an Indian classical vocalist from the Hindustani tradition in northern India. Prasad has performed widely in India including the prestigious Devnandan Ubhaykar Youth Festival in Bangalore; the Bombay Music Circle; Bhatkhande Festivals at Shree Vallabh Sangeetalaya; and at the Music Circle in Los Angeles. He's been performing and teaching regularly in the United States for the last 18 years. Prasad was featured at the 2004 worldwide Konkani Sammelan, and participated in a rare Hindustani-Carnatic jugalbandi (a shared performance by two equal soloists) at the Tsunami Aid concert in 2005.

In addition to being an accomplished vocalist who has studied Indian classical music formally with a guru since the age of six, Prasad is also an accomplished programmer. He created iTabla Pro to help Indian classical musicians with their practice. But anybody can use the app. It's a powerful program, one I use in almost every practice session.

You can tweak many parameters on iTabla Pro, but best of all—especially for someone unfamiliar with Indian music—is that iTabla Pro comes preprogrammed with several dozen settings already created. You don't have to know anything to get started. In addition to the drone, the app also has tabla, if you want to play against a drone with rhythms. Many more metric feels are available than are found in Western meters.

Suggestions for Playing with Drones

It's best if you create your own exercises and play around with drones yourself. If you're not sure where to start, here are some suggestions for practicing with drones. Simplest of all is to start playing the same note, or possibly chord tones (fifths or thirds). Next play melodies. Starting with scales would be like learning a new language by diagramming sentences before you learned what the language sounded like. Melodies have more meaning than scales. Compare hearing a sentence to hearing someone

recite the alphabet. Which is more interesting? Which carries more information? Use a melody you really like, one you know well, or one you want to learn.

1) **Unison long tones:** As simple as it gets. So easy anybody can do it. Play the exact same note and match the pitch. This should be required practice for all musicians who play a bowed or wind instrument, or voice. Do you know what notes on your instrument are chronically out of tune? If not, this is a great place to start.

2) **Melodies:** Memorize a melody you're working on as soon as you can, *especially* if you're reading music. Play the melody against the tonic pitch of the key. Hold each note out for a full breath and stare with your ears. *Feel* how that melody note sounds against the tonic.

   ◊ You should sing the melodies, too. If it has lyrics, sing the vowel sound from each word against the tonic. If there aren't words, use any vowel. Watch a lesson on singing vowels from vocal coach Jeannie Deva at http://is.gd/belalu.

   ◊ **Example**: *Nature Boy* by eden ahbez is usually in the key of C minor. Set the drone to C, and *really listen* to how each note of that beautiful melody sounds and feels against the C tonic pitch. Pay attention to the intonation between the large leaps. Listen for the tension against the drone, and the release of the tension. What's the lyric at that point of tension? Nat King Cole sings a great version at http://is.gd/ayuhef.

3) **Improvise**: It's a lot of fun to improvise against a drone, and even more fun to improvise against a drone with a rhythm behind it. If you find this intimidating, start simply by choosing only three or four notes to improvise with. If you've learned the melody, choose some of them, or pick a couple that blend well with the drone (roots, thirds, fifths), and a couple tones close to those that are dissonant (4, #4, #5, 7^{Maj}).

4) **Chord tones**: In order to resonate fully, the pitch of some chord tones has to be altered slightly. Play chord tones with a drone (root, third, fifth, seventh) and you'll hear it for yourself. If you listen carefully, of course.

5) **Scales**: Lots of excellent musicians never practice scales. Others think of scales merely as a collection of notes. You can make scale practice more interesting *and* useful by playing against the drone. Double down by varying the rhythm, starting on notes other than the tonic, running the group of notes from highest to lowest in your range, and do scale patterns.

Playing with drones and losing yourself in the sound is a great way to experience a flow state, especially if you don't have a lot of skill on your instrument yet. It's a meditative experience and is a useful way to practice thinking in music, no matter what your ability level might be.

If you find yourself becoming bored or unfocused, increase the difficulty level by adding rhythmic patterns. Whether it's a *taal* from the Indian classical tradition, a groove from a funk tune, or some sick beat you just threw down with mouth percussion. Play melodies, licks, scales, or exercises with the drone-rhythm combination. Garage Band is a free program and its pre-made loops are fun to play with.

The absolute best way to play with drones is to get together with two or three other people and play long tones together. Guitarists might need to use an EBow to sustain the tone, but for wind players, take your deepest breath and breathe through the instrument until your lungs are empty, take another breath and do it again. The eight brothers in Brothers Hypnotic always start their group practice with long tones, "because it's the principle of simplicity. The most basic thing is one note. It's meditation. It connects you to the Universe. You're putting your sound right out there into the ethers; it's going everywhere, it's touching everything. Anything that's worth anything lasts long."[4]

Don't be like the artist chewing crayons to understand color. Use your ears. Play long tones. Play with drones.

Extensions

Practicing with Drones

Jazz trumpeter Ingrid Jensen talks about practice, including playing with drones. On the Web: http://bit.ly/1nlt7w6

ZAKIR HUSSAIN & RAKESH CHAURASIA
Zakir Hussain, tabla, and Rakesh Chaurasia, bansoori. Listen for the tanpura drone. On the Web: http://bit.ly/1vGznQl

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[1] From *Between the Folds*, a Peabody-winning documentary. Watch the trailer at http://www.greenfusefilms.com.

[2] The NY Philharmonic Brass (including Ethan Bensdorf) demonstrate the power and beauty of playing in tune at http://is.gd/pazuki.

[3] In the Carnatic tradition of southern India, the same instrument is known as a *tambura*.

[4] Watch the Brothers Hypnotic on Independent Lens: http://is.gd/riyuwa.

Chapter 31
Going Mental

As a single footstep will not make a path on the earth, so a single thought will not make a pathway in the mind. To make a deep physical path, we walk again and again. To make a deep mental path, we must think over and over the kind of thoughts we wish to dominate our lives.
Henry David Thoreau, author (1817-1862)

Pandit Ravindranath Bellare, master of the Indian tabla drums, traveled to Berlin around 1950 to translate ancient Indian manuscripts that had been written in Sanskrit on palm leaves. Housed at Humboldt University in Berlin, the ancient writings contained information about Indian culture, including music practices used at the time they were written. As a master musician and scholar of Indian music himself, Pt. Bellare must have been incredibly curious about the secrets these old scrolls contained. The Sanskrit writing revealed a forgotten mental practice method that would influence Pt. Bellare's own music practice.

Before I tell you of the method, it's important to understand just a little about Indian classical music, one of the oldest musical traditions on the planet. Indian classical music is a rich and complex tradition, especially where rhythm is concerned. Indian classical music contains complex rhythmic structures (called *taals*), including groupings of 5, 7, 11, 12, 13, and even 9½-beat groupings.

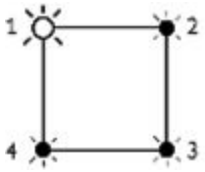
You can probably imagine how challenging it would be too keep your place in a piece of music that had 9½ beats. The visualization technique Pt. Bellare discovered helps players keep their place in the music. Rupesh Kotecha, a student of Pt. Bellare, uses a simple four-beat pattern to explain this visualization technique to beginners.

Rupesh tells beginners to start by visualizing a simple line. On the line are four equally spaced dots, or nodes. Since most of us read from left to right, let's say that beat one is to the far left of the line, and beat four is the dot just before the end of the line. You can imagine the line and the dots to be any color you want, and any size. Now bring to mind a favorite

piece of music that has a four-beat pattern: The Beatles' *Yellow Submarine*, Metallica's *Enter Sandman*, or Pachelbel's *Canon in D.*

Beat one gives off the brightest pulse of light. On beat two, the second dot pulses, and so on. Beats two through four are equally bright. After the fourth beat the pattern begins again at beat one with the brightest pulse marking the beginning of the pattern. Simple, right? So far, your visualization looks something like this:

You could add more detail by including subdivisions of the beat, like eighth notes. The eighth note pulse of light would be less bright, and equally spaced between the beats. If the piece was particularly slow, like Pachelbel's *Canon in D*, you might even add sixteenth note points of light to your visualization, dimmer yet and equally spaced between the eighth notes. But let's keep it simple.



This is a dynamic visualization: the light moves in time with the beat or pulse of the music. Also, the rhythmic cycle repeats. To see the cyclical nature of a rhythmic cycle, or meter, you have to visualize the pattern in two dimensions. Make the line into a square.

Once you've connected the line into a geometric shape and can visualize the light pulsing through the shape, you've got the essence of the method Pt. Bellare discovered written on those ancient palm leaves. Visualizing lights pulsing around a square like this takes a bit of practice, but I've found it helpful. The strategy has made it easier to keep my place in a 16-beat Indian *taal* I've fallen in love with, *Gajamukha*. I've begun using it to visualize improvised jazz solos I'm learning, too, but I'm using the square shape for eight-bar sections, so each side of the square represents two measures. If you often get lost in the form of a tune, try this technique, it works great!

After decades of practice, Pt. Bellare was able to visualize complex three-dimensional shapes when he played tabla, an ability that allowed him to “see” his way through a piece of music. He knew, on a deep level, *exactly* where he was in the rhythmic cycle at any moment. Rupesh expressed admiration and awe that no matter how intricate the raga, or how ornate the improvisations became, Pt. Bellare *never* got lost.

The visualization technique Bellare discovered and mastered is an advanced mental strategy. There are other mental practice strategies that you can benefit from that require less effort and yield more immediate results. Rupesh shared another mental strategy he uses that anyone can adopt immediately.

Rupesh said he prefers to practice at night, but said that it can be difficult—especially after a long day—to come to a practice session without any preparation. Rupesh’s strategy is to write down the details of a raga he wants to practice on a small note card, keeping the card in his pocket so that throughout the day, he can pull out the card and study its details.

This is a brilliant strategy for two reasons. First, it takes advantage of the fact that our brains retain information better if the input is spread throughout the day (remember the snail-shocking study?). Second, priming your awareness throughout the day will be excellent preparation for the evening practice session, almost like a day-long mental warm-up.

Mental practice is anything that doesn’t directly involve playing your instrument. Take the ability to read music for instance, or music theory. Both are intellectual pursuits that you can study without the instrument in your hands, though it’s usually better if you’re playing an instrument like piano or guitar while learning them.

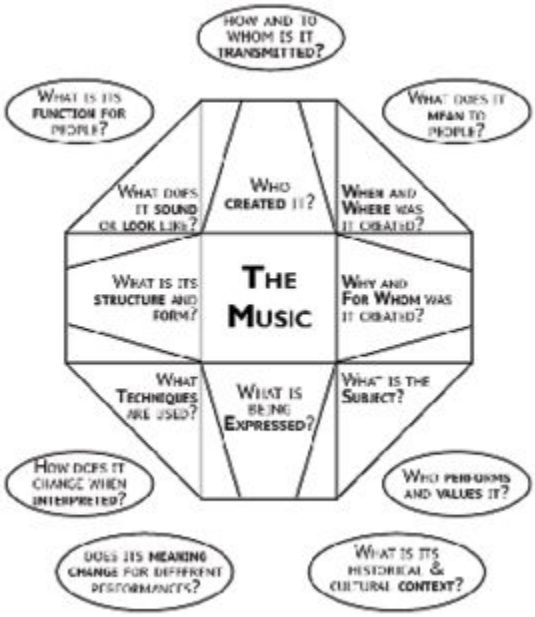
Maybe learning to read music and music theory doesn’t interest you. It’s certainly not necessary. Lots of musical traditions and many great musicians don’t use written music at all, and those who do usually memorize it. However, even if you don’t need or want to read music, teaching yourself other facts about the music you’re working on is important, and it’s another kind of mental practice.

Ask any dedicated musician about the music they’re performing, and they’ll tell you all kinds of things about the tune: who wrote it, who performs it, different versions of the song, musicians playing it, and

probably even the make and model of the instruments being used. When jazz trumpeter Ingrid Jensen was into a trumpeter, she said she was “into everything about them, from their shoes and what they were wearing, to who was in the band, and what record label they were on, and what music they were playing, and what trumpet they were playing, getting really into those details.”

Every piece of music has a history, and often that history can be interesting, and might help you give a better performance. For example, eden ahbez’s tune I mentioned in the last chapter, *Nature Boy*, shares the first two bars of its melody with Dvořák’s *Piano Quintent No. 2 in A Major*, Op. 81, composed in 1887. Listening to the Dvořák piece might give you some insight into singing the tune. At the very least, it’s a neat story to tell on stage if you need some extra time.

If a piece of music is a gem, facts about the music are its facets. If you don’t know the answer to the following questions about the music you’re working on, you’ve got a perfect opportunity for a bit of mental practice.



Facets of an Artistic Work[1]

Mental practice is also more practical. All great musicians use some form of mental practice in their pursuit of excellence. Mezzo soprano Joyce DiDonato calls it *silent practice*, because she’s not actually using her voice. Instead of singing, she works on other things like playing the piano part and hearing the vocal melody, or studying the poetry of the

words, or learning rhythms. In fact, she said, “The amount of actual *singing* I do is probably the least amount of practice that I do.”[2]

If you’re a brass player, you know it’s physically impossible to keep the horn on your face for an entire practice session, and mental practice is a great way to rest your chops but keep making progress. Mental practice is crucial to making good use of the practice session time no matter what you play.

One of my trumpet teachers—George Recker—used to say, “If you can’t sing it, you can’t play it,” and he was right. Start by singing whatever you’re working on: use a piano or other instrument to help you get those pitches in your head. If you aren’t a singer, try whistling or humming.

Practicing mentally away from the instrument makes intuitive sense. Before I knew what mental practice was a *thing*, I was doing it, sitting in a lifeguard chair at 6 AM, watching early-bird lap swimmers slap their wet way up and down the pool. I was in a lifeguard chair for at least an hour almost every day from age 15 to age 24. I tried to make the best use of my time by practicing in the chair while keeping my eyes on the swimmers, going over scale fingerings and patterns, softly singing the solfège syllables that went along with them. I’d sing and finger any other music I was working on, too. Singing solfège while doing fingerings away from the instrument is just one kind of mental practice.

Published studies into mental practice go way back to 1892. The first music-related study I’m aware of that looks at mental practice is also one of the earliest studies on music practice in the English language, done by Grace Rubin-Rabson in 1941. The first formal study of music practice focused on mental practice because mental practice works. Other studies have shown further evidence.

At Harvard, Alvaro Pascual-Leone scanned the brains of volunteers before and after practicing a simple piano piece. As you might expect, the brains of those who practiced at the piano showed neural growth that reflected this practice. The remarkable thing is that Pascual-Leone had a second group just *think* about doing the exercise, and these folks were instructed not to move their hands while doing the mental rehearsal. This kind of purely mental practice showed an equally pronounced change in

the same region of the motor cortex as those who actually played the instrument when practicing![3]

Another study by Stewart Ross looked at how well mental practice works for college trombonists. Ross measured the effectiveness of five separate practice methods: regular practice, mental practice only, both regular and mental practice, mental practice with moving the slide, and no practice at all. Surprisingly, *everybody* improved the second time around. However, the players who improved most combined physical and mental practice.

So what are some mental practice strategies? A paper by noted scholars on music practice and self-regulated learning, Gary McPherson and Barry Zimmerman, found that successful musicians used many of these mental practice strategies:[4]

◊ Isolating problem sections to practice mentally
◊ self-talk (talking yourself through problems, issues, or approaches out loud, coaching yourself)
◊ chanting or clapping or tapping out rhythms
◊ singing parts
◊ counting
◊ fingering silently (while hearing the music in your mind)
◊ imagining someone you admire greatly is in the practice room listening to you closely
◊ visualizing a performance in great detail.

If you watch documentaries about musicians, you'll catch them doing mental practice all over the place: tapping out rhythms, singing parts, self-talk, all of the above. Not just classical musicians, but rockers, jazzers, bluegrassers, indie singer-songwriters—everybody. That's because mental practice *works*.

Perhaps one of the oldest traditions of mental practice is the Indian tabla musician's use of mnemonic syllables to say a rhythmic pattern (a *bol*). Speaking a bol with expression is a great way for the tabla player to memorize how to play a pattern.

There are lots of ways to get in some mental practice. In college I knew a trumpeter who would carry around a valve casing with working

valves. All the rest of the trumpet had been cut off. He kept the valves with him wherever he went and used them to practice whenever he had a spare moment. People who saw him with these valves probably thought he'd gone mental, and he had, but in the best way.

Extensions

The Speaking Hand

Ustad Zakir Hussain is a master of tabla and rhythm, a world treasure. Hear bols, learn about his mental practice, and hear amazing music. On the Web: http://bit.ly/1j7GHuG

Coltrane's *Giant Steps* Animated

Pt. Ravi Bellare's mental visualization technique reminds me of this Flash animation of John Coltrane's *Giant Steps* by Michal Levy. On the Web: http://bit.ly/1i4yQhY

Rowan Atkinson's Invisible Drums

Hilarious sketch of what a drummer's mental practice might look like if the drummer is Mr. Bean. On the Web: http://bit.ly/1oSt1eZ

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[1] Barrett, McCoy, & Veblen, 1997, p. 254, used with permission, emphasis added. The book is out of print, but a new edition is in the works.

[2] From Stephen Hough's radio show about practice: http://is.gd/bobude.

[3] Pascual-Leone, 2001.

[4] McPherson & Zimmerman, 2002.

Chapter 32
Chaining and Back-Chaining

It is a mistake to look too far ahead. Only one link in the chain of destiny can be handled at a time.

Winston Churchill, politician (1874-1965)

Unlike many practice strategies, chaining and back-chaining work the same for the master musician and the neophyte. The only technique to develop is knowing when to use the strategy, but that's easy. Chaining and back-chaining are useful for especially challenging sections of music, stuff that's literally impossible to play at first. The concept is simple: play a short snippet until it's polished, then play the next, with a bit of overlap between snippets. I used this strategy to learn *William Powell*, an intricate fingerstyle guitar tune by Leo Kottke. It took me two hours of practice every day for six months before I could play the tune, and I had to use chaining and back-chaining for all of it.

For less experienced players, it's common for the beginning of a piece to be strong and the end to be weak. This common failure is mostly a result of inefficient practicing. Inexperienced musicians tend to practice a piece by starting at the beginning, playing through until they have a major train wreck and everything crashes to a halt. A beginner then goes back to start it all over again. Using this practice approach, the beginning of a tune gets *way* more attention and repetition than the rest of the piece, especially the ending. Don't waste your precious time with this approach.

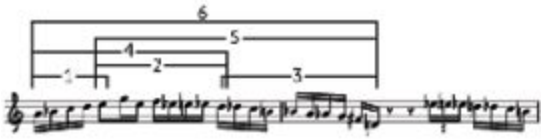
As you've already learned, your first order of business with a new piece is to go through it and identify the problem sections: those phrases or sections that are going to need the most work before they become familiar and easy. Once you pinpoint the challenges, you're ready for chaining and back-chaining.

A small phrase or section works best, something that can stand on its own melodically or rhythmically, but it can be as short as one note to the next. Learn the short group of notes slowly and perfectly. Then move to the next group of notes. The chain part comes from the fact that each of the short sections overlaps with the sections on either side.

Below is an example I transcribed that uses two phrases from Clifford Brown's improvised solo on his 12-bar blues tune *Sandu*. I never used the written music while learning this solo. I used the free Audacity program to learn it. Even though I was learning the solo by ear, I still used the chaining and back-chaining techniques to really get the notes solidly under my fingers.

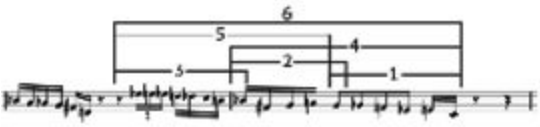
Below are the two most challenging sub-phrases in the solo, so I practiced them before anything else. For the first phrase I used chaining, and in the second, because it's got a tricky ending and is the hardest part of the solo for me, I used the back-chaining technique.

Though I learned this by ear, I've written it out because the concept is easier to understand if you're looking at the music, even if you don't read music. Each short numbered section is repeated until it's mastered at a given tempo. Then the next phrase is practiced, and so on. Notice how the repetitions overlap, and are on three levels of increasing length. Here's the chaining sequence I used to practice the phrase you see below:



Listening intently to Clifford Brown breeze masterfully through the improvisation, I knew the next phrase would be an even greater challenge. It's tricky, it's the very end of the phrase, and I wanted to practice for a strong ending. Back-chaining is the way to go for strong endings.

There's nothing tricky about back-chaining; it's just chaining done backwards. The power of back-chaining is that the very last bit of music gets the most repetitions. Building more repetitions at the end of the phrase makes it more solid than those parts of the phrase that are repeated less often. Are you with me? Here's the sequence I used. Notice the sequence and the overlap:



It's a good idea to apply the back-chaining strategy on a larger scale, too, to the entire piece, by practicing your way backwards through the piece so the later stuff gets the most repetition. During the performance, towards the end is when you're likely to be the most tired, especially if you're a brass player. Use back-chaining and you'll have practiced the end of the piece most, and the end will feel more effortless.

Extension

Clifford Brown Plays *Sandu*

The licks above happen right at the end of the free sample. The full tune is well worth 99¢. On the Web: http://amzn.to/1oStu0T

Chapter 33
Go Go Gadget Practice

When music technology takes the place of musicianship, it's time to pull the plug.

Robert W. Brown, musician (b. 1981)

Grandmaster Flash spent his teenage years practicing on scavenged electronics he found in New York junkyards. He had to resort to junkyards for his electronics because he had been dismantling the family electronics and "became like public enemy number one" because he couldn't put them back together correctly.[1]

As he practiced, Grandmaster Flash invented techniques like cutting (moving between tracks exactly on the beat), back-spinning (manually turning records to repeat brief snippets of sound), phasing (manipulating turntable speeds), and clock theory (marking the record like a clock face so the DJ can quickly find the right spot on the disc)—creating the basic vocabulary of the hip-hop DJ. He invented some of the technology, too, like the Peekaboo system that allows a DJ to listen to the disc being prepared while the other plays.

You don't have to get as deep into electronics as Grandmaster Flash did to get the benefits of using gadgetry in your practice. In this chapter I'll show you some of the more fun and useful gadgets you can use that will not only spice up your practice time, most of them will help you improve your musical skills too. What's not to like?

Pull Your Head Out of Your Apps

A word of caution seems necessary before we jump in. Your absolute first priority should be to master the fundamentals of tone production and technique on your instrument, whatever it is. Don't let these super-fun toys distract you from mastering musicianship. Of course, for musicians like Grandmaster Flash or electric guitarists, the gear *is* part of the instrument. Whatever your instrument, use caution; keep plugging away at your main instrument despite the very real seduction of technology.

Okay, now that I've got that out of the way, I highly recommend you check out the following apps. I've chosen apps that are universally useful. Look around for apps for your particular instrument and you're bound to find one or two useful additions to your practice gadgetry.

iTablaPro: Play with Drones (do it now)

Created by Prasad Upasani, this is the app mentioned in the *Drone Power* chapter. I use this app for nearly every practice session. Many parameters to toy with. On the Web: http://is.gd/wejoto

iReal Pro: Chord Charts and Rhythm Section

When you can't play with a real rhythm section, this is the perfect app. Customizable rhythm section, thousands of songs in most genres, easy style change. Active forums to share chord charts. Transpositions for all instruments with a touch. Works on all platforms. On the Web: http://irealpro.com/

Tempo SloMo: Slow it Down, You Move Too Fast

Learning fast tunes will be a little easier with this app. You can slow down non-DRM music files, loop and label sections, and save your work. iOS only. On the Web: http://is.gd/iluniy

Other Instruments

A gadget doesn't have to be electronics. It could be another instrument. In addition to the percussion I mentioned last chapter, I see a shofar, four didgeridoos, two cymbals, a 21-inch gong, a child's djembe and a gorgeous full-sized WULA djembe, a titanium open-hole flute, a conventional flute, a clarinet, Peruvian Pan flutes, a set of tabla brought straight from India for me by my lovely wife, whose gorgeous Schecter electric bass guitar stands at the ready in the corner, a tin whistle, a Kaossilator phrase synthesizer, an iPad, two piano keyboards, a soprano trombone, a flugelhorn, two Farmer foot percussion pedals, a Gretsch hollow-body electric guitar, a Martin EMP1 acoustic guitar, and my gateway instrument, the instrument I play the most and love the best, my trumpet. Aside from the pleasure of messing around with multiple

instruments, there are other real benefits to adopting at least one or two instruments in addition to your main instrument.

Rhythmic Practice

Rhythm is a fundamental music skill, and practicing your rhythmic skills on something other than your main axe is a good idea. It's pretty easy to learn the basic playing techniques for a small percussion instrument. Lots of musicians I've talked to about practice play the drum set, too, people like Serge van der Voo, Erin McKeown, and others. The benefit of playing a rhythm instrument is that when you play, *rhythm* is your main focus: not notes or scales, just rhythm—the almighty Beat. It's a refreshing change. Very few days go by that I don't spend some time playing conga, djembe, or small percussion. Rhythmic practice is important enough to get its own chapter, which is coming up next.

Harmonic Practice

Harmony is another cornerstone musical element, so understanding harmony is important. There are at least two ways of understanding harmony: intellectually and aurally. The more important of the two is being able to *hear* harmonic changes. When trumpeter and producer Herb Alpert talked with tenor sax legend Stan Getz about taking some improv lessons, Alpert said, "So, should I prepare by practicing my ii-V progressions?" [a ii-V is a common harmonic progression]. Stan Getz said, "What's that?" Although Getz may not have known what the chords in the progression were intellectually, you can bet your life that he can play them on sax. In addition to playing chord progressions on their main instrument, most serious players can play chord progressions on harmony instruments, too, like piano or guitar.

The piano keyboard is one of the best gadgets for understanding harmony, both intellectually and aurally. First, it's easy to make a sound; as long as you have fingers, you can play a piano. Because a piano keyboard is set up in a linear, high-to-low configuration, and because notes with accidentals are the black keys, it's super easy to understand harmonic concepts and play them at the keyboard. If you can't afford one, buy a melodica, a tiny piano that you blow into. It sounds like an accordion and a good one only costs around $50. Aside from cost, the only other

downside to a piano is that it's difficult to transpose quickly to another key. For that, guitar can't be beat.

Guitar has a lot of things going for it: it's small and portable, and you can find one no matter where in the world you happen to be. But it's not an instrument that's as easy to make a good sound with as piano is. Still, it's not *that* hard. Whereas the piano is linear and color-coded, the guitar is linear in two dimensions (up the string, and across the six strings) and is *not* color coded. That's why perceiving relationships between notes on the fretboard is more of a challenge. However, in my experience, creating a groove, or a rhythmic chord progression, is much easier on guitar than it is on the piano. It's also a lot easier to transpose a song to another key: you either put a capo on the neck, or move the same finger pattern up a fret or two.

Although I understood the concept of tritone substitutions intellectually long ago, it wasn't until I played one on guitar that I actually "got it" on a deeper level, so that I could actually *use* the concept, both when playing trumpet or laying down some rhythm guitar. Finally, you can easily plug a guitar into an amplifier. Amplified sound allows you to explore all kinds of gadgetry on any instrument.

Amplified Sound

If you play music long enough, you'll eventually be faced with the challenge of amplifying your sound realistically. It's trickier than it sounds, and like any other musical skill, it takes practice. Don't wait until the gig, because if anything *can* go wrong, it will. Amplifying your sound will open up all kinds of new and interesting practice options.

Because this chapter will have only bare bones of information about most of this gear, you should adopt Grandmaster Flash's approach, and learn by experimenting with the gear, and seek more information online, in books, or from friends. If you want to escape the ire of those you live with, think twice before dismantling anything. Some of this gear can be expensive. Upright bass player Serge van der Voo said, "If you enjoy it, you just want to have the right tools." And often the right piece of equipment makes practice even more enjoyable.

Microphones

The microphone takes physical vibrations and turns them into electrical signals. Though there are many kinds of mics, the two you'll see (and use) most are the simple dynamic mic, which rarely needs power, and the marginally more complex and more sensitive condenser mic, which always needs power.

The dynamic mic is most often used on stage because it tends to be more resistant to feedback. The most-used vocal mic since it came on the scene in 1966 is the Shure SM58, which goes for around $100.

The condenser mic requires a power source, because the power sensitizes the capacitors that react to incoming vibrations. This makes condenser mics more sensitive to sound than dynamic mics, and because of this they tend to be best for quiet environments. If you're looking to record in a home studio, or looking to record your practice sessions in the practice room, a condenser mic might be the way to go.

You tend to get what you pay for, but even a $15 mic will serve you better than no mic at all. In recording a CD for one of my books, *All About Trumpet*, the mic used to capture the superb upright bass playing of Dennis Carrol was a ribbon microphone taken from a World War II era submarine, a mic worth over $10,000.

Amplification

Volumes of information exist about amplifiers. Choosing an amp is like choosing a spouse: it depends on what you like, what you need, and how you want to play. At the very least, you want an amp that has inputs for a ¼-inch stereo cable (typical guitar patch cord size), and an XLR, or microphone jack (pictured below). It's useful to have another auxiliary jack for connecting drum machines, phones, or music players, so you can amplify other accompaniment.

Effects Pedals

All you need to know about effects pedals is that they alter the incoming sound before it's sent to the amplifier. Pedals come in a bewildering array and do all sorts of cool stuff, but the only effects pedals

that are a true boon to practice are the pedals that allow you to loop and layer musical ideas. Check out the Andrew Bird link at the end of the chapter for examples of a musician using looping pedals in a creative way.

There are several varieties of loop pedals, but they all do the same thing. Hit the "record" button with your foot, play whatever you're gonna play, then hit the "loop" button at the end of the clip and it immediately repeats as many times as you want. Looping pedals aren't cheap, but the fun-factor and the ability to immediately assess what you played make them worth the expense.[2]

I share a condition with many like-minded musicians. It's called IAS: Instrument Acquisition Syndrome. Most of the instruments I listed I can play only at an advanced beginner level, some much worse. I've only ever performed in public on a few, but that's not the point. One of the points is that working with another instrument makes practice more fun and interesting.

The other, more important point is that even though your technique and ability might be rudimentary or worse on another instrument, the skills you practice on these other instruments will transfer to your main instrument, enhancing your overall musicality. Take inspiration and consolation from the words of composer Gustav Holst, who said, "Anything worth doing is worth doing badly."

Extensions

Andrew Bird's One-Man Band

Watch Andrew Bird play live with loops. He whistles, plays violin, xylophone, and sings. On the Web: http://bit.ly/1o6pCJm

Pat Metheney: Gadget Master

You'll never find more musical gadgets controlled artfully than Metheney's Orchestrion Project. On the Web: http://bit.ly/1lQEc2L

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[1] Gross, 2004, p. 141.

[2] Find most music gear mentioned in this chapter: http://is.gd/azehuj.

Chapter 34
Rhythmning

I got rhythm,...who could ask for anything more?
Ira Gershwin, lyricist (1896-1983)

When confronted with a student who claims to have no rhythm, Taylor will often give the student an impish smile, and say, “Do this," as he places a hand over his heart. He asks, “You *do* have a heart beat, right? Do you feel your heart beating?” The student will nod. “You *have* rhythm,” Taylor says. “It’s right there. You’re feeling it right now.” If someone is particularly stubborn, insisting that all the love songs are true and the heart is outside conscious control, Taylor might say, “Okay. Can you walk at a steady pace? That’s rhythm, too.” Taylor's belief, shared by many teachers (and yours truly) was immortalized in a song written for Ivie Anderson: *All God's Chillun Got Rhythm.*

Taylor is a Chicago-based djembe musician and teacher. He's the first person in the world to receive a Tam Tam Mandingue Diploma from the school created by West African grand master drummer Mamady Keita. Taylor went on to become a certified teacher in the Tam Tam Mandingue school, too. He puts on a great workshop.

Without rhythm, there is no groove, no beat; without rhythm, there is no pulse, and we all know what happens when you don’t have a pulse. Without rhythm there is no dancing. Rhythm is essential to making good music. Like matching pitch and playing in tune, rhythm is a musical skill you should give special attention to. But as essential as good rhythmic ability is to making music, there's an even better reason for working on your rhythmic skills. A line from the jazz standard I mentioned above goes, "All God's children got rhythm, to push away the blues." Playing a rhythm instrument is fun!

The late, great Charles Dowd was one of my percussion teachers as an undergraduate. When he introduced us to small percussion instruments, he’d adopt a stern voice and an icy glare, admonishing us to “Never say toys!” He wanted us to understand that small percussion instruments were to be taken seriously. But small percussion instruments (and all

instruments, in my opinion) *are* toys, and just like the best toys, small percussion instruments do double duty: they're fun and they help you hone your rhythmic skills.

Playing a small percussion instrument rhythmically forces you to focus on rhythm alone—no melody, no harmony, just the almighty Beat, the Groove, the Swing, the Rock. With a melodic or harmonic instrument, there is *so* much more to pay attention to that rhythm—important as it is—sometimes takes a back seat when your brain is trying to do fingerings, play in tune, and a host of other tasks. With a percussion instrument—especially one like an egg shaker that's easy to play—your sole focus is rhythm. Playing a percussion instrument forces you to physically embody the rhythm in a way that feels much different than pressing fingers down on valves or keys or frets in a rhythmic way.

There are many rhythmic instruments to choose from. Looking around me now I see: a conga, cabasa, castanets, maracas, claves, guiro, shekere, shakers, triangle, wood block, cajón, didgeridoo, rain stick, temple blocks, tabla, talking drum, timbales, tef (Turkish instrument like a giant tambourine), agogo, cow bell, asalato, and various rattles. It's a motley menagerie of instruments, and I love them all. Most small percussion instruments require a playing technique that's easily and quickly learned, but like any instrument, mastery takes years of focused practice.

Best of all, even a good small percussion instrument is usually inexpensive. All you *really* need is your hands and a flat surface like your lap, which is as cheap as it gets. Egg shakers are a great choice, because they're cheap, sound good, are relatively easy to play, and two will fit in a case or a pocket. They also sound good with almost all kinds of music.

Because most small percussion instruments are pretty easy to play and you can easily pick up those skills on your own, I'd like to show you two more challenging rhythms to learn: the tumbao and the clave. Both are important rhythmic patterns that originated with West African people brought to Cuba for slave labor. From Cuba, the rhythms migrated north to Congo Square in New Orleans and to the world beyond.

If you're a fan of Latin or Cuban music, you know the tumbao and the clave. The rhythm is so cool that it turns up in a whole lot of other genres, too. First, I'll show you one of the basic tumbao rhythms played on

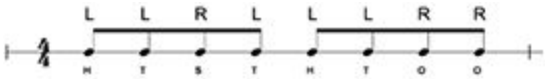
the conga (or a cajón, a tabletop, your lap, etc.), then I'll show you the clave pattern, and finally how they fit together. Just like any instrument, the conga and its associated rhythms will take a lifetime to master, but understanding the basics and playing them at a beginning level is fairly easy. Learning these rhythms will help your rhythmic understanding and ability. Plus, I think you'll find it a fun addition to your practice routine.

TUMBAO

A real conguero plays on at least two drums, and sometimes as many as five or six, but for this pattern, you only need one drum. Any drum will work, as will a tabletop, or even your lap, but it sounds best on a conga-style drum, like this one:

In the following example, L=left hand; R=right hand. You'll be using your left hand in two ways: hitting with the heel of the hand (H), and with the fingers, or "toes" of the hand (T). Rock your left hand back and forth between the heel of your palm and your fingers and you've got the motion. With your right hand, you'll be slapping the drum by hitting it and leaving your hand on the drum, called a "slap" (S), and hitting the drum but letting your hand rebound quickly off the drum to produce an open tone (O). This is more complicated sounding to write than it is to do. To help out, I'll suggest a practice sequence below the rhythms. If you're left-handed, reverse all the directions.

The basic tumbao rhythm is simple eighth notes, each beat divided equally in two. Here it is with counting and fingering:



Here's a suggested sequence to practice the tumbao if it's completely new to you:

1) Teach your hands when to play. Don't worry about the left hand's heel-toe part of the sequence yet. Just go back and forth between the hands as shown above the rhythm: LLRLLLRR. Start slowly.
2) Teach your left hand the "heel-toe" technique. Rock back and forth between the heel of your hand and the fingers. You want all your fingers to make contact, not just the finger tips. Do this rhythmically.
3) Practice the slap alone with the right hand. Keep the other hand on the drum and press it into the drum head a bit when you do the slap for a nice "pop" sound.
4) Practice the open tone with the right hand. Play off the drum head, rebounding quickly so the drum resonates with a good tone.
5) Now use what you learned about chaining and back-chaining to get the sequence under your hands. Break the phrase into two parts. Once you've got the four notes down, combine the whole sequence. Check out the video links at the end of the chapter for more help.

Clave

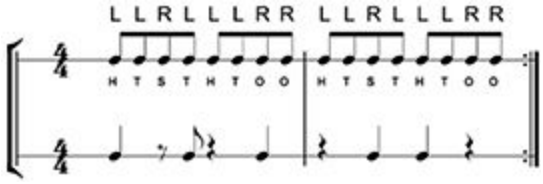
There are two variations of the clave: son clave, and rumba clave. We'll stick with the son clave, because it's easier. You'll hear this rhythmic pattern all over the place. Some north-American musicians call it the Bo Diddley beat because Bo Diddley had some huge hits using the son clave pattern.

The clave pattern is two measures long. One measure has three notes and the other has two, and depending on the needs of the music, the clave pattern might start on the two side (called two-three clave), or on the three side (called three-two clave). I'll show you the three-two son clave below.

Again, this is best done with the original instrument, like the claves shown here, but you can hit anything together, including those instruments at the end of your wrists: your hands. If your claves look like these, the concave part faces in to your palm and is hit with the smaller stick. Here's the 3-2 son clave pattern:

It might be easier to learn this pattern by ear, especially if you don't read music. Check out the link to a clave tutorial video by conguero Michael Spiro at the end of the chapter.

Playing each of these patterns separately will take some time and attention, especially if you're not a percussion player. If you're a drummer, you'll pick these up easily. After you've mastered each rhythm on its own, do both together if you can. When I'm doing both the tumbao and the clave at the same time, I use a tone block on my Farmer footpedal for the clave because it gives a nice tone that is similar to a clave. Take it slowly and work it out. It will help to know where the parts line up. Here's what that looks like:



Once you can play both parts together, I encourage you to dig just a little deeper. You'll find that the three side of the clave should be emphasized by the conga part (there are various ways to do this). There are many, many more subtleties of the clave and the tumbao that are worth exploring. Latin music is a rich tradition containing tons of aural treasures. I encourage you to take a lesson or two with a conga player to get you on your way. If you're in Chicago, there is no better place than the

Old Town School of Folk Music. There's probably a conga player near you. Take some lessons!

The Drum Set & Other Toys

The drum set is the only widely adopted original acoustic instrument ever invented in the United States. The drum set arose in jazz, the first original art form from the United States. Old-school players and students of the drums know the drum set as the *trap set*, which is a shortened form of one of its original names: contraption. Whereas most drumming traditions prior to the trap set used the hands alone, the drum set requires all four limbs.

The drum set is another fun (and super-challenging) way to develop your rhythmic sensitivity and ability. Singer-songwriter Erin McKeown has taken up the drums recently and says one reason she loves learning to play drums is that it changes her relationship with her main instruments. She said,

> I've been playing guitar for more or less 20 years and piano for much longer than that. How do you relate to this thing that you've had in your hands forever? How can you continue to relate to it in new ways? You go to another instrument. I learn another instrument and go back to my guitar or the piano and they feel different to me.

There are very real benefits to taking up some sort of rhythmic instrument in addition to your own, whether it's an instrument as cheap and ubiquitous as an egg shaker, an instrument as uncommon as a didgeridoo, or an instrument as challenging as an asalato or a drum kit. Playing with time will give your skills on your main instrument a real rim-shot in the arm.

Extensions

The Tumbao Pattern on Conga

Forty-year veteran conguero, Johnny Conga shows you how to play the *tumbao* on conga. On the Web: http://bit.ly/1j7JgNi

The Son Clave Pattern

Master conguero Michael Spiro gives you an excellent lesson on son clave, and helps you practice it. On the Web: http://bit.ly/TuxAQ1

Asalato: You think Drum Set is Hard?

These asalato players are great! I still play mine like a drunken, thumbless juggler. Looking for a challenge? Try these babies. On the Web: http://bit.ly/TuxXdu

Chapter 35
Playing with Time

Fast is fine, but accuracy is everything.
Wyatt Earp, lawman (1848-1929)

On a snowy February night in 1994, legendary singer-songwriter Jeff Buckley put on a stellar show at Uncommon Ground in Chicago. At that show was Greg Kot, well-versed Chicago music critic and co-host of the superb podcast *Sound Opinions*. Kot said the performance was one of the best shows he ever attended, high praise from a man who has heard thousands of performances. Despite a career cut tragically short by an accidental drowning, Jeff Buckley remains an important musical voice of the late 20th century.[1]

When my Gypsy jazz combo *Swang* was booked for a gig at Uncommon Ground, in the same space as Buckley's semi-famous performance, it made me a little nervous. Performing in a space where a music legend has performed evokes a particular motivation that's difficult to describe. You want to *bring* it; you want to deliver the goods, you want to be worthy of the space and the focused attention of a relatively large audience. I'm still learning to embrace this kind of pressure. It's a source of motivation to do well. Having butterflies before a performance is a good thing, especially if you can get them to fly in formation.

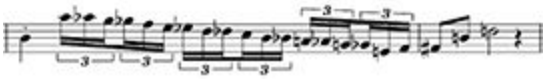
The pressure I felt was increased a bit because it was the first gig *Swang* had ever played that charged a cover at the door, and the place sold out thanks to our wonderful friends and fans. Not a big deal in the grand scheme of things, but for us, it was important. We were all excited and a little nervous. Then, a week or so before the gig, the pressure I felt was ratcheted up another notch.

One of our members couldn't make the gig. No worries. We had been playing gigs in various configurations of the group for some months, and we could cover it. But in the last rehearsal, four days before the gig, we discovered that a tune we wanted to play—the Gypsy jazz standard *Minor Swing*—contained a blisteringly fast descending chromatic run that was

usually played by our soon-to-be-missing guitarist. It's a cool run, and even though it wasn't essential to the tune, it would be a shame to cut it. So I decided to attempt it on the trumpet, even though it's usually played on guitar.

I remember thinking, *I'll put all this research on practice to use*. Immediately following that, I hoped that it wasn't true that the difference between theory and practice is that in *theory* there is no difference, but in practice, there is. Here's the run:

MM=180 (B^b trumpet)



It's a simple chromatic run, but the speed and that first upward leap makes it a challenge to play on trumpet. In the past I never would've tackled such a fast run so soon before a gig. But I wanted to try out a new approach I'd learned about in a research study, the strategy I'm about to show you. It's a strategy anyone at any level can use. My hope was that with this new strategy, I could get the run solidly in four days.

Before I tell you about that strategy, however, I'd like to show you another strategy for getting something up to tempo, the one lots of musicians use. This strategy is mandatory if the music is super challenging, like if you're learning speed-metal guitar licks by Yngwie Malmsteen, or learning John Coltrane's blazing fast tune *Countdown*, like jazz guitarist Bobby Broom did. When learning *Countdown*,[2] Broom said,

> It wasn't like I could just start out practicing at even a medium tempo. I remember having to approach it super-slowly. I looked at my tendencies and... increased the tempo as I could over days, weeks, and months.

The way your brain learns is by building the connections necessary to do whatever it is you're practicing. If you play something incorrectly during practice, that's what your brain remembers. Take your time. Do it right.

Using this approach—gradually speeding up over time—is simplest if you use a metronome. Using a metronome not only allows you to keep track of your speed, it'll point out where your rhythm isn't as precise as you thought. The metronome also allows you to increase speed by very small, nearly imperceptible increments. Here's how it works:

1) Find the tempo at which you can play a short passage perfectly. Pay attention to how relaxed you are. If you can play the passage but are tense, or on the verge of making a mistake, keep repeating it until you're relaxed. To get something super fast, you *have* to be relaxed. Practice that way.
2) Increase the tempo just enough so you creep into the zone where you're not comfortable any more, but are still able to play the passage. Keep repeating it until you're relaxed and comfortable again.
3) Increase the metronome speed by one or two clicks. If you're not using a metronome, get marginally faster.
4) Repeat.[3]

Is this a tedious and grueling process? Well, yes, it is. And as Bobby Broom said, it can continue for weeks and months. It's the price you have to pay for awesome. But there's a way that might shave off some time. It's the technique I used for the run I decided to play at *Swang's* Uncommon Ground gig.

My first introduction to this technique was through a research study that tested three methods of tempo increase with two conditions.[4] Some practicers got to hear a good example between repetitions, and the others didn't. The three strategies for increasing speed that were tested included the incremental method I just described (gradually increasing speed). Another was simply flailing away at the piece at performance tempo the whole time. And the last strategy is the method I've been building up to for this whole chapter: alternating between a slow tempo and performance speed.

You can probably tell by my language that “flailing away” at performance tempo the whole time isn’t the way to go. In Henley’s study, the flailers performed with the worst accuracy, as you might expect. Those who gradually increased their tempo did better. But those who used the technique of alternating between half speed and performance tempo produced the best results.

Now, this was a small study, and the differences weren’t statistically significant, but that’s never stopped me from adopting a strategy to see if it works. In my experience, this alternating method works great, and it’s the strategy I used to try to get that run up to speed for *Swang’s* Uncommon Ground gig. It works so well for me that it’s become my go-to strategy if what I’m learning isn’t too ridiculously fast. Try the strategy and judge for yourself.

But even more important is the only statistically significant finding from the study, and that has to do with the two conditions: some players had a good example to listen to, and some practiced without an example. Nobody should be surprised that those who listened to a good example did significantly better than those without the model. Hearing a passage played correctly at the correct tempo is a *huge* benefit. No big surprise, right? Listening to great recordings of music you perform has real benefits to your practice.

Don’t abandon the gradual-speed-up technique, though. That’s great for pieces that are fiendishly difficult or fast. I had to use that technique for Kottke’s *William Powell* because it was so hard. But for something that’s within your reach, the alternating tempo approach is the way to go. Buco—my bandmate who was absent for the gig—swears that alternating between performance tempo and half speed works best. That’s the method Henley tested in his study, and I tend to agree, as long as you can play the passage perfectly at half speed. I find it also helps to go so ridiculously slowly that nobody can tell what you’re playing. So, did it work for me at the gig?

We sold out that *Swang* gig at Uncommon Ground where I put this approach to the test. All eyes were on us: friends, family, strangers. When people I know and love are in the audience, I’m *way* more nervous, so that didn’t increase my odds of landing the lick. I still wasn’t sure I’d attempt

it. Plenty of time to back out. I told myself to wait and see how my chops felt and decide in the moment.

We kicked off *Minor Swing*, played through the playful harmonies in the head, and everyone took a nice solo. Then came the out-head and the run I'd practiced was just a few bars away. If I skipped the lick, nobody would be the wiser, and there was no risk. We'd end cleanly. But I thought, *What's the worst that could happen*? Mere moments to go, I committed to playing the lick, took a deep breath, and brought up my horn.

Why not go out on a limb? That's where the fruit is.

Extension

Minor Swing by Major Masters

Written by Django Reinhardt and Stéphane Grapelli in 1937, here are some modern Gypsy masters cavorting on this simple, fun tune. On the Web: http://bit.ly/1o6sWEi

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[1] Watch the rockumentary *Everybody Here Wants You*: http://is.gd/lolidi.

[2] Hear a sample of *Countdown* on the Web at http://is.gd/epumis

[3] It might be helpful here to refer back to the Flow diagram on page 47. You're shooting for the "arousal" zone.

[4] Henley, 2001.

Chapter 36
Let's Get Physical

There are thoughts which are prayers. There are moments when, whatever the posture of the body, the soul is on its knees.
Victor Hugo, novelist (1802-1855)

Robert Schumann warmed his injured hand in the guts of a freshly slaughtered cow. It was one of Schumann's many attempts to heal his injured digits. Schumann was one of the great Romantic-era composers. Because Schumann made his living as a pianist and composer, hand injuries were troubling to him. In order for this gory remedy to be effective, Schumann was supposed to "keep it there as long as the natural warmth lasted."[1] The composer half-jokingly wondered if some essence of the cow might be transferred to him. Maybe that's why he created some udderly mooving melodies. Sorry. Couldn't resist.

Many musicians have suffered from playing-related injuries, whether it's repetitive stress injuries, back problems, or other physical problems. In 1988, the International Conference of Symphony and Opera musicians surveyed 2,212 orchestral musicians and found that 76 percent of them suffered from medical problems affecting their ability to play. [2]

Playing-related injuries are common not only among musicians who put in long hours of practice, but also among beginners who may not be using proper technique. Older beginners with less resilient bodies may also be more prone to suffer from playing-related injuries. Many of the musicians I've spoken with about practice find it important to include their physical health as an integral part of their music practice, and not always because they're trying to stave off injury. Posture also affects tone quality.

The way you hold your body and manipulate your instrument have audible affects on resonance of tone, accuracy, and intonation. At nearly every master class I've watched—many of them given by world-class musicians—a student plays some challenging piece of music for the Master, who then critiques the performance. Almost *every* time, one of the

first things the Master works with are absolute fundamentals: how the student is holding the body, their physical presence and how that affects the sound.

Following are brief overviews of some of the approaches musicians use to help them move better. The techniques help musicians avoid and/or recover from injuries, but even better, these techniques contribute to creating a great sound. I encourage you to look into each of them more deeply, and perhaps find a teacher or a musician who uses them to show you more about the technique in person.

Alexander Technique

One of the most popular techniques studied by musicians (as well as actors, athletes, and others) was created by Frederick Matthais Alexander, a Shakespearean orator, active in the 1890s. Alexander's discovery came about as a result of his own performance-related injury. Alexander began to develop a hoarseness in his voice that got so bad he could barely make a sound. Doctors weren't able to help him either, but at least he didn't try putting his head into a freshly slaughtered cow's thoracic cavity.

Instead, F.M. Alexander began to closely observe himself in multiple mirrors, hoping to spot a cause for his hoarseness. He began to notice bad habits that constricted his posture, so he began to experiment with how he held his body when speaking. The changes he made eventually cured his hoarseness, and the changes actually improved the power and resonance of his speaking voice.

Four years after his initial injury, Alexander began teaching his technique to others, eventually devoting his life to helping people use their bodies more efficiently, helping them to overcome injury and to perform with greater power and resonance.

Much of the Alexander Technique centers around how you hold your head, your chest, and your hips. Generally, the idea is to let the skeletal structure do the "work" in staying upright, allowing you to move in a relaxed, open way. It's difficult to describe with words. Watch a few sessions through the links you'll find in this chapter.

Is the Alexander Technique effective? Some well-known musicians have publicly endorsed it, including Yehudi Menuhin, Paul McCartney,

Sting, Julian Bream, and Sir James Galway. The Alexander Technique is often taught in many schools of music, too.

Lori Schiff's video *The Alexander Technique: Musicians' Method for Improvement* is a good introduction to how this technique is helpful for classical musicians. It's on the Web at http://is.gd/ajaxow. A quick YouTube search will show you how the Alexander Technique works for musicians in other genres, too.

The Feldenkrais Method

To say that Moshé Feldenkrais was a self-starter is an understatement. In 1918, at the age of 14, he emigrated—by himself—from his small hometown in Russia (now Ukraine) to Palestine (now Israel), where he worked as a laborer for a few years before finishing high school. While there, he also began to study mathematics and jiu jitsu. After graduation Fledenkrais found work as a cartographer. The eponymous method of movement Feldenkrais would create also had its genesis in an injury, a knee injury Feldenkrais sustained in a soccer game. Before he devoted himself full-time to this method of movement, Feldenkrais moved to Paris and earned degrees in mechanical and electrical engineering, including a doctorate. He worked as a research assistant in the lab of a nobel laureate, and in his spare time he earned a 2nd degree black belt in judo.

During World War II, Feldenkrais escaped to England, where he became a submarine hunter. It was on the deck of a submarine that he re-injured his knee and, refusing treatment for the injury, Feldenkrais began to study movement in earnest. In the course of his study he consulted the work of many others, including F.M. Alexander. Feldenkrais wrote his first book on his discoveries entitled *Body and Mature Behavior* in 1949. Eventually Feldenkrais settled in Tel Aviv to teach his method full-time.

The method Moshé Feldenkrais developed helps people become conscious of their movement through awareness of the ways in which the body moves. There are over 2,000 exercises and techniques used to foster greater physical awareness. You can learn in group lessons called *Awareness Through Movement*, as well as private, individualized lessons meant to address your specific needs, called *Functional Integration*.

Calling these interventions *lessons* instead of *sessions* (as in therapy session), emphasizes that, just as with the Alexander Technique, students are meant to *learn* how to move, and are supposed to take that knowledge with them and apply it in their everyday life. This is different from, say, massage therapy, a treatment in which the recipient is passive and isn't required to learn anything or do anything later.

Teachers of the Feldenkrais Method complete around 800 hours of coursework over three to four years. Hagit and Uri Vardi are experienced Feldenkrais teachers in Wisconsin. Follow this link to learn more about the Feldenkrais Method from them. On the Web at http://is.gd/demufi.

Other Methods of Movement

While the Alexander Technique and the Feldenkrais Method are perhaps the most well-known techniques musicians use to heal themselves and improve their playing, some musicians find other methods equally useful. Jazz trumpeter Ingrid Jensen incorporates movement and qigong exercises into her practice.

Qigong is a centuries-old Chinese practice that incorporates movement, breath, and the circulation of energy in the body. For wind players, this might be a good choice. Ingrid said she adopted qigong into her practice in order to recover from playing-related injuries that threatened to end her music career altogether.

Yoga is another discipline that some musicians draw upon to heal themselves or maintain health. Nicole Newman is a classically trained flutist who developed spinal problems as a result of long hours of flute practice. She turned to yoga for help, cured herself of her pain, and went on to create Yoga for Musicians, with sequences and exercises designed specifically for musicians.

The discipline of yoga has eight "limbs," two of which are most commonly adopted by musicians. *Asanas* are the postures used in yoga and are what most in the West associate with yoga. The other useful yoga practice adopted by some wind players is *pranayama* (regulation of the breath). Pranayama is a powerful practice and isn't something you should attempt without a teacher.

If any of these methods I've (very briefly!) covered piques your interest, it's a good bet you can find a practitioner and teacher near you.

Take some lessons or classes to get a taste and see if it helps with your music making.

Plain Old Exercise

Although many musicians find success and healing with the previous methods, many others simply emphasize staying fit as part of their practice. Some musicians, like former Chicago Symphony horn player and master teacher Gail Williams, run marathons. National Symphony and Kennedy Center Opera trumpeter George Recker took epic bicycle trips, including 3,000 mile cross-country treks.

You don't have to be that ambitious. Even a long walk is better than nothing. Physical fitness will help improve many aspects of your practice like nothing else can, including stamina, lung capacity, general muscle tone, and perhaps the most important factor in lifetime improvement: longevity. Best of all, if you stay fit and use your body efficiently, you won't have to seek a remedy for an injury that involves sticking your injured digits in any recently deceased creature's warm thoracic cavity. That's definitely a bonus.

Extension

An Alexander Technique Lesson

Watch Alexander Technique instructor John Henes give Hans Marius a lesson. Listen carefully to how his sound subtly changes for the better. On the Web: http://on.fb.me/1oSzKpa

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[1] Sams, 1971, p. 1156.

[2] Musician injury statistics retrieved from http://is.gd/qicori

Chapter 37
Improve with Improv

To sing a song is like whispering to a child's ear. It is an art heavily relying on improvisation.
Andrea Bocelli, musician (b. 1958)

Not long ago, I had a meaningful improvised musical conversation with a five-year-old girl. Our musical conversation was entirely spontaneous and took me by surprise. Behar is the daughter of Cengiz, who was one of my regular musical collaborators at the time. Behar had come with her dad to a rehearsal for *Meh!*, a free improvising group I'd started as a way for music education students—and outside community members like Cengiz—to experience how fun, rewarding, and easy it can be to improvise freely.

As the group members of *Meh!* warmed up, Behar sat twiddling at the grand piano, off in her own little world. With my trumpet I "answered" something Behar had "said" at the piano. She didn't notice. It didn't matter. I kept up our one-sided conversation for another phrase or two. Then Behar realized what I was doing. She heard me. She turned her head to look at me and her eyes lit up. She became intentional about what she played at the piano. I "answered" her, she responded. We proceeded to have a lively, giggle-inducing conversation.

That improvised musical conversation with Behar utterly convinced me how crucial improvising is to music learning, and a musical life. It also convinced me that anybody old enough to coordinate their body can improvise, and it's a kick. It helps for younger improvisers to use an easily sounded instrument like piano or marimba. There is absolutely no reason to wait for kids (or adults) to master their instrument and the intricacies of chord progressions before launching into musical improvisation. If you can make a sound, you can improvise. Improvising is a natural human response to sound. Everybody improvises with sound all the time, every day. We call it speaking. Nobody's scared of an improvised conversation.

The fear of improvising is a real fear, and somewhat valid, especially for many Western classical musicians and anybody with a fixed notion of musical talent. I've seen this fear glistening in the eyes of some stellar,

highly trained young musicians. When all your music making comes from written music, there is a distance between the music and its ownership, for lack of a better word. With no sheet music in front of you, the sounds you make up are entirely your own creation. This can be scary.

But it's *way* more scary—and even dangerous from the ego's perspective—if you hold a fixed notion of musical talent. With a fixed notion of musical talent, your musical creations are a direct reflection of whether you "have it" or not. Because what's "right" or what's a "mistake" in improvising isn't clear, improvising is risky at best to someone with a fixed mindset. You'll recall that a fixed notion of musical talent tends to make people want to demonstrate that they have talent, and to avoid at all costs any demonstration that they don't have talent. Not everybody is able to comprehend Miles Davis's famous statement: "Do not fear mistakes. There are none."

Fear of improvisation is also ironic. The fear arises in part from the idea of being judged. To understand why this fear of being judged is ironic, I have to introduce you to Dr. Charles Limb, a neurologist and musician who does fascinating work investigating the musically improvising brain. In one study he asked jazz piano players to improvise in an fMRI machine.

The fMRI is a massive machine used to map real-time brain activity. In the brain, blood flows where there is neural activity, and the fMRI can track where that blood flows, telling us which parts of the brain are being used for certain activities. The tricky part in measuring an improviser's brain in real time is that the M in fMRI stands for "magnetic." The machine creates a strong magnetic field, and for that reason, nothing metal is allowed within the machine. This is just one reason why Dr. Limb didn't use improvising trumpeters in his study. He looked at the brains of improvising jazz pianists using plastic MIDI pianos.

Limb compared brain activity during a memorized exercise with brain activity during an improvisation. During the improvisation, blood flow to the lateral prefrontal cortex dropped dramatically, meaning that part of the brain was "switched off." Blood flow to the medial prefrontal cortex was elevated, or turned on. Why is this interesting? Limb said,

> We have a combination of an area that's thought to be involved in self-monitoring turning off, and this area that's thought to be

> autobiographical, or self-expressive, turning on. A reasonable hypothesis is that to be creative, you have to have this weird disassociation in your frontal lobe. One area turns on, and a big area shuts off so that you're not inhibited; so that you're willing to make mistakes; so that you're not constantly shutting down all of these new generative impulses.[1]

The improvising musicians in the fMRI study had lots of practice improvising. It's my guess that just because you're improvising doesn't necessarily mean that the "judgment center" of your brain is switched off. Turning off the judge probably takes practice. True, it's only one study, but the evidence fits how improvising feels to me.

You might think you don't need improvisational skills unless you're a jazz musician, or an Indian sitar player, but I would disagree. Nearly every Western classical musician I've spoken with says they improvise, often during the warm up. It's not improvisation based on chord changes, but free playing, exploring the instrument and getting a sense for how the chops feel. Rex Martin and Colin Oldberg both said they improvise in nearly every warm-up they do. I'm convinced that musical improvisation is one of the highest forms of the musical arts.

This leads me to encourage you to practice improvisation. And when you do, try not to judge what you hear, either from yourself or from another with whom you might be improvising. This is easier to say than to do, but it's a great exercise. We are judged and tested and held accountable too much in this life. It's refreshing to let go of that for a while. You can assess and think about what you hear, even talk about it, but don't apply anything as limiting as "good" or "bad" to what you hear.

Improvising with one or more people is like a spontaneous conversation, whereas playing using written music is like reading a book or a story out loud. Both are wonderful things to do, both serve a purpose, both can be fun and enlightening. And just like any conversation or book, they can also be boring or pedantic or simplistic; some conversations are doomed to be dominated by a loud-talker or a "topper." With written music, the unfolding sound is scripted. Spontaneous conversations—whether verbal or musical—flows where it will. Anybody can do it.

Free improvising is as simple as any conversation, and the guidelines are similar. We listen to the other person or other people we talk with. So first, allow yourself the space to let anything come and accept it for what it is. If you need to judge or assess what you're playing, make a recording and listen to it later. Don't judge what you're playing or what you're hearing, just respond to it, and don't forget that as a response, silence is often the best one.

Just like an improvised conversation using language, there are parameters. We talk about a topic, we don't just spout random sentences at each other. So it's a good idea to set some kind of parameter to limit the possibilities. Stay in one key, or a small group of notes, or a rhythm. What you want is an idea that will provide a little bit of structure, like the way a seed crystal will provide something around which a snowflake can form. If someone says, "Just play something, play anything," the infinite possibilities can be daunting. If instead, you decide, "We're going to use the notes D, E, F and C# only, and play very quietly using long tones," then you've got a sandbox to play in. Limitations can set you free.

The point of this chapter is to encourage you to forget the sheet music, forget the scales, forget what it means to be "right" or "wrong," forget everything you think you know about music (for a while anyway) and just listen and respond with sound. Try to make sound that expresses something, anything, even if it is just the expression of the sound itself. Toy and experiment with note length, volume, timbre, movement, articulation, or anything else that comes to you, whether you're alone or with others.

Experiencing and producing improvised sound is a great and—I would argue—necessary addition to your daily practice routine, and your experience making music with other people. There are no "wrong" notes in this kind of music, and that's another of its beauties. As Shakespeare's Hamlet said, "There is nothing good or bad, but *thinking* makes it so."

There are countless resources to learn idiomatic improvising, whether it's in bebop, Indian classical, or Arabic Maqam. To improvise proficiently in any of these styles of music takes a great deal of study, and years to master. Free improvising can be done by anyone of any level. It's an attitude and an approach more than a particular idiomatic technique. Doing it well will also take some work, of course.

During a recent Google Hangout, jazz tenor sax legend Sonny Rollins was answering a question about how improvising can lead to a spiritual, transcendental state. Mark, the guy asking the question, said, “I envy you being at that level. I’m still working out rudiments, still working on my scales and my ii-Vs and all that stuff, so it’s more difficult for me to get to that place....”

Sonny said, “Well, you know, Mark, let me stop you right there. When you’re working out ii-Vs, for instance, and you’re blowing your horn, concentrate on one note that you’re playing. Realize that *that* note is a gateway to the ‘spiritual realm’ and that note is very important. That’s very important. Don’t think of it as—well, it’s got to have a certain level of proficiency to matter.... That’s not true. It all matters. And one note, at the level you are, is very important to you getting where you’re going. It’s all important.”[2]

You don’t have to be even mildly proficient on your instrument to benefit from improvising during practice. How long it would take for babies to learn to speak if they waited until they had the alphabet learned before experimenting with the sounds they can make! What are you waiting for?

Extensions

Douglas Ewart: Life Is Art

A free improvisation using instruments, spoken word, electronics, and Ewart’s beautiful explanation of life as art. On the Web:
http://bit.ly/1m58Gjb

Teach Us to Care and Not to Care

Charles Limb is doing fascinating studies of the musically improvising brain. Limb explains what he’s discovered in this video. On the Web:
http://bit.ly/1kpisNs

Bobby McFerrin & Richard Bona

Master improvisers Bobby McFerrin and bassist Richard Bona put on quite a show. They really get cookin’ at around 6:38. On the Web:
http://bit.ly/TuCYTb

[1] From the video linked at the end of the chapter. Read his full article in PlosOne at http://is.gd/usuqun.

[2] Google hangout with Sonny Rollins at http://is.gd/uniray

Chapter 38
Compose Yourself

Consulting the rules of composition before taking a photograph is like consulting the laws of gravity before going for a walk.
Edward Weston, photographer (1886-1958)

Gustav Mahler liked to compose in the Alps. A visiting friend stared out Mahler's window and commented on how beautiful the mountains were. Mahler said, "You needn't stand staring at that—I've already composed it all." Lots of composers find inspiration in the places they love, but none have done it quite like Hays and Ryan Holladay.

The Holladay brothers have created a new way to share their music, but you have to travel while you hear it. Literally. You have to be in a specific place, like Central Park, or at the Washington Monument in D.C., or driving along the Pacific coast on Highway One. They call it "location-aware music." You listen to the music through an app running on your phone—the only way the music is released—and you experience the music as you navigate through the landscape. The GPS in your phone plays music specifically created by the Holladay brothers for your exact location.

So although Hays and Ryan aren't the first to compose music for a specific place, they're certainly the first composers to allow the listener to choose their own musical adventure. In a delightful way, the listener is a co-composer of the music. When you hear the word "composer," what does it bring to mind? Seriously, take a second and think about it. I can wait.

You might have imagined a man at a piano, scribbling down notes in a torturous process à la Beethoven, or maybe a guy with a white wig and a seemingly offhanded genius like Mozart, or perhaps the composer you imagined wields the puzzle-master counterpoint skills of Bach. Maybe you thought about a musical staff and note names and how to write down pitches and rhythms, all jotted down from musical ideas that

spontaneously arose inside your mind. These ideas about composers are somewhat correct, but they're certainly not the whole picture of composition and composers, not by a long shot. Composers aren't all men, compositions don't have to be written down, the process doesn't always (or even usually) arise spontaneously inside the mind, and composers aren't found only in Western classical music.

Consider songwriting, for example. How is songwriting different from composition? It's not. Composers make meaning by filling the canvas of silence with consciously constructed layers of sound. Whether somebody's writing a song, making up a sick beat on the computer, or scoring a podcast, these folks are composers because they're all architects of sound.

The power of composition as a way to practice took me by surprise. Singer-songwriter Erin McKeown was the musician who opened my eyes to the merits of composition as a useful practice approach. Erin is one of several professional musicians I've spoken with who say they don't practice. My belief is that they say this not because they're not working to get better—they are—but because what they're actually *doing* to get better looks and feels very different from our stereotypical notions of practice. For Erin, the time she spent honing her musical abilities with voice and guitar involved songwriting.

Soon after picking up the guitar in her early teens, Erin managed to get hold of a four-track recording device. A four-track recording device allows you to record a section of music, and then go back and layer three more musical parts on top of the first. Apple's Garage Band program is a superb example of a multitrack recording device. Others exist that are much smaller, self-contained units.

Everybody's composition process will differ, but the basics look a bit like this.

- ◊ Sit down with an idea or two—they don't have to be long—or even no idea at all but a willingness to sit and noodle, or improvise until something sounds good.
- ◊ Take that snippet of an idea and record it.
- ◊ Listen back, realize it's not good enough, or not quite right in some way, and you do it again. And again. And probably

again, enough times so that what you finally record sounds good to you.

◊ Then you go back to the beginning and lay down the next part. Maybe you add percussion, maybe you add a harmony to the melody you just created, maybe you improvise over the chord progression you laid down as you search for a musical idea that works.

The point is that you're actively engaged in making sound and you're being highly critical of the sound you create. As you repeat and repeat and repeat on your quest to get the sound right, you're honing your technique and gaining skill. The reason songwriting doesn't feel like practice is because it's so very different from the notion many of us have of practice: boring repetition, scales, reading music, etc. As you know by now, practice encompasses *much* more.

It's engaging and fun. There's a sweet bonus, too. At the end of the process you've created music that is uniquely your own, and you own it, in every sense of the word. It's your engagement combined with constant assessment that makes composition-based practice so effective. But it can be intimidating to start composing if you've never done it before. Heck, it's intimidating even if you *have* done it before. The empty canvas, the blank score, and the blank four-track recorder hold limitless possibilities, and that's daunting. Composers and songwriters overcome this by using prompts.

Compositional Prompts

Staring at a blank page, or a blank screen, or a blank four-track recording device can be intimidating. It's tough to know where to begin. As one of my research and teaching projects, I taught composition to older adults. They all did a fantastic job and created some interesting pieces, but like anybody, regardless of age, it helped them to have a way to get into the process.

That's where compositional prompts come in. A compositional prompt is a suggestion that gets the creative juices flowing, allowing you to jump-start the compositional process. It's not a trick or gimmick. It's what composers do, whether it's using a film's images and storyline to

create a soundtrack, creating music based on a place like the Holladay brothers, or composing sounds that evoke a particular emotion or feeling. Here are some compositional prompts to consider.[1]

1) **The KISS principle: K**eep it **S**hort and **S**imple. Complexity and length should arise organically. Until it does, especially at first, keep it short, keep it simple.
2) **Place**: John Luther Adams is an Alaskan composer who grew up playing drums in rock bands. He went on to become a professional composer who creates lavish and interesting pieces, many of which were evoked by natural beauty. My own first composition was of a Baja sunrise. One of my students, Nancy, in a sweet gesture, composed a piece for me that evoked my hometown, Sitka, Alaska. Places have resonance. What sounds would you combine to evoke your favorite place?
3) **Songwriting**: Lyrics can inspire sounds, rhythms, and stories. Sting said he often starts with just a title. It's a creative technique a German man with the unlikely name of Helmut Schlicksupp called *semantic intuition.* Taking a course in songwriting will give you even more ideas and techniques. Try the free songwriting course from Berklee College of Music on Coursera at http://is.gd/oxasiv. Learn how other songwriters and composers work on the Song Exploder podcast at http://is.gd/bumuhu.
4) **Steal (not really)**: Bebop artists in the '40s and '50s liked this one. Chord progressions can't be copyrighted, so you can swipe a chord progression and use it for your own composition. Twelve-bar blues tunes and *I Got Rhythm* are both good examples of this. Now "all" you have to do is come up with a melody, lyrics, and an arrangement. Easy peasy.
5) **Sample**: Even more "steal-y" than #4. When Picasso said, "Good artists copy. Great artists steal," he probably had

something else in mind. One of the most-sampled bass lines ever is Queen's *Another One Bites the Dust*, a bass line John Deacon said he "stole" from *Good Times*, a disco hit by Chic. Mark Ronson explains sampling and gives some great examples of sampling at http://is.gd/erovim.

6) **Loop**: Create a simple rhythm or chord progression and loop it. Loops, even simple ones, will give you the foundation for more musical experimentation and invention. Record what you're doing so you can make it a permanent composition if you lay down something sweet. Consider a four-track recorder (find some at http://is.gd/kokoge), or a loop pedal (at http://is.gd/buhiga).

7) **Repeat:** Almost all music has repetition in it, whether it's the eerie morphing repetitions of Steve Reich's haunting *Come Out*, the captivating repetition in Ravel's *Bolero*, or the refrain in a pop song that comes back over and over. Use repetition to your advantage. Study how repetition works in songs you like and copy it.

Composition, like improvisation, doesn't have to wait until you master music. To be a composer, you don't have to understand how to write music, how to orchestrate a piece, or know about the principles of harmonic movement. In fact, even using the word "composition" can be kind of daunting because it's hard not to think of Western classical giants like Beethoven, Bach, and the boys. It feels a lot less intimidating to just make stuff up, doesn't it?

Nobody is born as a composer or songwriter; it's a skill to be learned like any other. The best time to start learning composition is right now, no matter what age you are or what level of skill you have. One of the great things about composing is how invigorating it can be. When the great Duke Ellington was asked what his favorite tune was, he said, "The next one. The one I'm writing tonight or tomorrow, the new baby is always the favorite."[2]

Extensions

Location-Aware Music

Ryan Holladay talks and gives examples of the music he and Hays created for the National Mall in Washington, D.C., and other places. On the Web: http://bit.ly/1ofLgbS

The Music of a True Place

Alaskan composer John Luther Adams speaks, writes, and composes eloquently. Recent winner of the Pulitzer Prize, his music speaks for itself. On the Web: http://bit.ly/1sVcULa

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[1] To learn more, especially if you'd like to *teach* composition, check out *Music Outside the Lines: Ideas for Composing in the K-12 Classroom* by Maud Hickey. On the Web: http://is.gd/quzelu

[2] Ellington, 1976, p. 463.

Chapter 39
Plays Well with Others

I think the downside these days is thinking that I can do all this all on my own. Yes, you can do this on your own, but you'll be a much happier human being to do it with other human beings. And I can guarantee you that.[1]

Mic Fleetwood, drummer (b. 1947)

The Midwest Gypsy Swing Fest is an intimate music festival that takes place every autumn on a farm just outside Madison, Wisconsin. Top-notch performers in the Gypsy jazz style come from all over the world to play—guitarists like Alfonso Ponticelli, Joscho Stephane, and Gonzalo Bergara, as well as violinists like Marielle de Rocca Serra, Steve Gibons, and Leah Zeger. The performances are great, but for me, they're not the best part of this kind of festival. The best stuff happens offstage after the show's over and the crowd has gone home. During the campfire jams, you can sit with musicians like these, watch them play up close, chat with them between tunes, and play along, sometimes until sunrise the next day. A campfire without music is like a beautifully shaped wave without a surfer.

Most performances purposefully create a separation between the musicians and the audience, but around a campfire, especially at a musical gathering like a Djangofest, you're *encouraged* to bring your instrument and join in. Players of widely varied levels all play together around the fire. It's a great hang, and the community is warm and welcoming. There is a lot of teaching, learning, and practice taking place around that fire, too.

Another practice myth I'd like to demolish is that practice always happens alone in a room. Not true. Folk musicians, punk rockers, jazz musicians, and many others already know this. But people like me, who grew up learning music in school in the Western classical tradition don't usually figure this out until much later, if we're lucky enough to figure it out at all. It's tragic. Some of the best music practice I've ever had was with other people.

Even talking with colleagues about practice can be helpful, but be sensitive about asking. Practice for some is a private issue. Jazz trumpeter Avishai Cohen said, “I always talk to cats about their routine, what exercises and all that.”

In my experience, group practice tends to be the most focused with just two people. I’m not talking about rehearsal, I’m talking about practice: working on a specific skill, slowly, and with lots of repetition, stopping to figure things out and talk things through. When you go into a practice session with another person, it’s helpful to have a few questions in mind. Like these:

1) How do you practice _____? (scales, improvising over ii-V-I, chords, or whatever interests you)
2) What are you working on?
3) Here’s what I’m working on. Any thoughts?
4) I’m having trouble with _____. How do you deal with that?
5) How do you work on tone?
6) How do you work on speed?
7) How do you work on expression?
8) How do you place your mics and tweak your amps to get the best sound?
9) What kind of (insert gear here) do you use, and why? (Could be anything from picks, to amps, to valve oil, to reeds, etc.)
10) Can you show me a favorite song or lick?

If you know the person you’re getting together with to practice, these questions will help get things going, or at least give you somewhere to start. If you’re in a more informal situation, like around a fire and you don’t really know anybody, it’s better to keep these questions in your mind, and see if you can figure them out for yourself. In that setting, it’s better to err on the side of silence. Don’t be a nuisance, and definitely don’t be “that guy.”

Making music with others is a profoundly intimate experience. Philosopher Bennett Reimer described it as

> a self-combined-with-other-selves experience in which individuality and community are fused in service of original musical expression. So powerful is this experience in enhancing both the sense of self and the sense of self united with other selves as to change the inner lives of all who have been privileged to undergo it.[2]

Practice with others. You'll find that bouncing ideas off another musician will go a long way toward improving your own approach and clarifying what you need to do next. And the very best part about practicing with others is that it's fun. It can be lonely sitting in a practice room all alone, hour after hour, day after day. Practicing with other people is much more enjoyable. Sometimes, there is beer. And fire. And stars.

EXTENSION

DJANGOFEST: SAMOIS SUR SEINE

Halfway through this short film about the Thomas Baggerman trio, you get a glimpse of what goes down at *the* Djangofest. On the Web: http://bit.ly/1k5MS7L (5:14)

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[1] From the documentary *Sound City*, with an all-star musical cast. On the Web: http://is.gd/obutuj

[2] From Dr. Reimer's autobiography. On the Web: http://is.gd/otuqub.

Chapter 40
Cover Your Assessment

The most fundamental aggression to ourselves, the most fundamental harm we can do to ourselves, is to remain ignorant by not having the courage and the respect to look at ourselves honestly and gently.
Pema Chödrön, Buddhist nun (b. 1936)

On Friday morning, January 12, 2007, in a Washington, D.C. train station, violinist Joshua Bell opened his violin case, carefully pulled out his 300-year-old, $3.5 million Stradivarius violin, and prepared to play for the morning commuters. Bell is a world famous concert violinist of superb skill and artistry, known to have made up to $1,000 per minute playing violin in the world's most prestigious concert halls. Like any good busker, Bell played in front of his open case and had put in some seed change to encourage donations. What do you think happened?

Bell performed six pieces over the next 43 minutes: Bach's *Chaconne*, Schubert's *Ave Maria*, and four other beautiful, challenging standards of classical violin repertoire. Over 1,000 people passed by as he played. And that's the kicker: *they passed by*! Almost nobody stopped to listen. Bell made $32 for his efforts, 20 of it from Stacy Furukawa, who recognized him, and another $5 from John Picarello, who stopped to listen the longest, nine minutes. Picarello said, "He had a good fiddle."

The stunt, set up by *The Washington Post*,[1] is not only a good reminder that context matters, it's also an indication that you can't always trust an audience to give you a reliable assessment of how well your practice is working. Your mother will probably not give you reliable feedback about a performance; your grandmother definitely won't.

Good assessment can be a challenge because sound is both abstract and fleeting. A sound—something you can't see, smell, taste, or touch—rings out and fades away as the moment passes. Music is the most vanishing of arts, and yet it's timeless and eternal. A parable. The impermanent, abstract nature of sound makes the task of assessing the qualities of that sound a challenge. In this chapter I'll introduce you to

ways that will help you assess your practice, so you can tell whether your practice is working or not.

Performance is just one means of assessing whether your practice is effective. And it's one of the ways of assessing your practice that happens near the end of the process. The best practicers are assessing their practice *all the time*. Getting reliable, ongoing assessment of your playing is one of the most important parts of practice. Good assessment is necessary for you to:

◊ See progress and improvement
◊ identify weakness
◊ plan improvement strategy, and
◊ realign your goals, especially short-term goals.

Assessment comes in myriad varieties, from the formal to the informal. In school music, long before *American Idol*, large and small ensembles have participated in music festivals in which musicians are judged and critiqued on their performances by three or more experts. Sometimes these festivals are competitive in the same way as *American Idol*, but without the screaming audience or the recording contracts.

Though musical competitions are popular, and even lucrative, my own opinion is that music is not a competition, it's a collaboration. The way you "win" at art is by *doing* it, not by relying on others to decide whether you're worthy of the blue ribbon or the prize money. Art is subjective; there is no first place. But many find musical competitions to be a great source of motivation to practice. Competitions provide clear, concrete goals to strive for, and that's great. If it motivates you to practice, go for it! But the subject of this chapter is assessment, and competition without some kind of substantive advice or critique won't help you get any better. The risk with competition is that if you don't "win," it might just beat you down. Nobody wants to be a loser. This is much riskier for those who hold fixed mindsets where musical talent is concerned. But you know this by now, right?

The Lionel Hampton International Jazz Festival recognized the dangers of treating music as a competition several years ago, and made important changes to how feedback was given to young musicians. Under the artistic direction of jazz bassist John Clayton and with help from lots

of other folks, the festival changed from being competitive to one that was more nurturing to young jazz musicians. They adopted an approach to critiquing performances that built up young musicians instead of breaking down those who didn't "win." One contributor to this change was Brad Howey, who crafted the rubric now used to assess young jazz performers.

The rubric helps performance evaluation clinicians give specific feedback to the performers along nine parameters. Clinicians also work with each performing group to help coach them into giving an even better performance. Great performances aren't rewarded with trinkets, but with valuable comments and learning advice, and the really good performances get the opportunity to play on the big stage, either opening for the professional players in the evening performances, or playing at Hamp's Club, an intimate small venue where the best student performers get a chance to show their stuff.

What, exactly, should you be assessing in your practice? Here are the elements in Howey's rubric.[2] When you assess your own practice, this is a good way to think about what you're listening for:

◊ **In Tune**: A strong, clear center to the pitch, in tune with all the other instruments.

◊ **In Tone**: Quality of sound is full and characteristic of the instrument or voice in your musical genre of choice.

◊ **In Time**: Rhythmic pulse is strong and steady, and rhythmic feel is appropriate for the genre.

◊ **Precision**: Music is technically precise, cohesive, blended, and balanced with all the other voices.

◊ **Dynamics/Expression**: The music is expressive and appropriately dynamically varied.

◊ **Style/Interpretation**: Articulations, phrasing, and feel are appropriate for the genre in which you're performing. If you're playing an interpretation, say of a jazz, rock, classical or other standard, is your interpretation original?

◊ **Soloing**: Does the improvisation create melodic material that reflects and enhances the piece? Does it make use of harmonic progressions, stylistic inflections, and instrumental mastery?

Assessment doesn't have to be this rigorous or thorough. In fact, focusing on only one of these items at a time will give you plenty to work with. Record yourself and apply these criteria to what you're hearing. The more specific details you get, the better. If someone else is listening to you in order to give you feedback—especially if it's someone who isn't an experienced musician—suggest to them what you'd like them to listen for so they can give you more reliable feedback.

Assessment from others is necessary and useful, but it's sporadic. You might get professional feedback like that given at the Lionel Hampton Jazz Festival only once or twice a year. Feedback from a teacher or peers is more frequent, but the most frequent and persistent assessment of your practice you'll get (and probably the most reliable, too, if you do it right), is your own.

Self-Assessment

Do you remember the first few times you heard a recording of your voice? It sounded vaguely familiar, but also very different from what you hear in your head. If you passed your own voice on the street you might look twice, but probably you wouldn't recognize it. This is also true for you as an instrumentalist or vocalist, especially if you're a wind player. When you create sound, the bones of your head vibrate as does the rest of your body, altering the way you hear yourself. The sound you create will be different from the sound you hear. If you play piano or guitar it's less noticeable. There is an even better reason for recording your practice, and that has to do with the amount of attention you can bring to bear while listening.

The act of creating sound on any instrument or voice is complex. While making music, the brain/mind attends to a vast array of tasks, from posture to embouchure to the scattered path of moving from one note to the next, like stepping on flagstones to avoid the muck. Even if the musical skill is automatic, it still takes a great deal of your cognitive processing power to actively make music. For this reason, you're literally unable to focus your full attention on listening to the sounds you're making.

When you return to the recording you can listen with your full attention. You'll hear qualities that were inaudible to you when your

attention was divided among the many cognitive tasks necessary to produce the sound. On the playback, listen *very* carefully for flaws of tone, rhythm, intonation, emotional expressivity (especially the lack of it), and everything else on the rubric Howey created.

Now you can attack each of those weaknesses and work to improve them. Check out the following list for software and devices you can use to record your practice and get some reliable feedback. Some perform multiple useful functions.

Technological Assessment Tools

Serge van der Voo, upright bass player with Orpheum Bell, said he records his practice, not only for assessment purposes, but to capture anything interesting that might come up. Serge said, "I definitely record my practices to listen back sometimes. I like it because it's so easy to...capture it and if it's crap, you delete it, but if it's something, you can save it."

Keep in mind that gadgetry is "extra." It's not absolutely necessary for good practice, or for good assessment. The only technology you really need is your instrument, unless voice is your instrument. Still, some of these assessment tools are incredibly useful and will help you analyze the results of your practice with way more fidelity than memory allows.

Audacity: Recording & Playback

With Audacity, you can record and manipulate audio. Record yourself on multiple tracks, or slow down, loop, change the key, or many other treatments of recorded music. Works on all platforms. FREE. On the Web: http://audacity.sourceforge.net/

Heard App: Recording & Playback

This neat little app constantly "listens" and at the touch of a button, will record the previous 1-5 minutes of audio. It's great when you're noodling and want to capture a cool lick or idea, or if you throw out a clam and want to listen to it more closely to see what went wrong. iOS and Android. On the Web: http://www.heardapp.com/

Coach's Eye App: Notated Video/Audio

Though it was created for sports, it's great for music, too, especially if you're working on movement, posture, or other physical aspects of playing well. You can notate the video, do side-by-side analysis with another video, and share the results to seek more feedback from others. iOS/Android/Windows. On the Web: http://is.gd/gojale

Garage Band: App or Program

One of the best things Apple ever did was to include this powerful software for free on its operating systems. The app is great, too. You can use it to record, compose, and create beats. Free on Apple computers. The app is free, but for $5 you get even more options. On the Web: http://is.gd/jegoyo

Spectre: Sound Analysis

This is one of the most sophisticated pieces of software available for real-time sound assessment. Used by tuba maestro Rex Martin in his teaching studio. Spectre has 17 different meters, including level history, spectrogram/graph. Mac OSX 10.6.8 or higher. On the Web: http://is.gd/simaso.

Probably the most important thing about assessment that you have to keep in mind is that you need clear, easily reached goals for whatever it is you're working on. With clear goals you'll know exactly what to listen for in your assessment. Once you've started to assess your practice regularly for a while, it'll come naturally, but at first, consider keeping a checklist for practice sessions. Write down your goals on the checklist as well as how you're going to assess whether you've achieved them. This will help you figure out if your practice is working.

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[1] This link to Gene Weingarten's 2007 story, *Pearls Before Breakfast*, includes a video clip of the performance. On the Web: http://is.gd/icuyuv

[2]For the full rubric, see Howey, 2011.

Chapter 41
You and the Night and the Music

Set aside half an hour every day to do all your worrying; then take a nap during this period.
Anonymous

40 winks, la la land, kip, saw wood, catnap, crash, doze, siesta, visit the land of Nod, get your head down, Bo Peep, snooze, catch some zees: the importance of something can be measured by the number of words we invent for it, like sleep. Sleep—and especially napping—has received lots of attention from researchers in the last few years. Whatever you call it when you get some shut-eye, scientists are beginning to discover how essential sleep is both before and after learning new tasks. This chapter is all about how sleep enhances your music practice. How cool is it that something you *have* to do contributes to your music learning? A recent study suggest that you can even practice *during* sleep.[1]

Imagine you and your best friend are in college, broke and a little bored, so you decide to do something interesting and earn a few bucks at the same time: you volunteer to be research participants. You sign up for a sleep study conducted in the lab of Ken Paller a cognitive neuroscientist. Paller and his research team have crafted an experiment to examine whether hearing a short melody while you sleep enhances your ability to play the melody when you're awake.

You and your friend start by learning two short melodies—one high and one low—using an animation the researchers created to help you play the melodies correctly on a computer keyboard. Everybody practices both melodies and then you're all tested and measured precisely to record how well you did. Then everybody takes a 90-minute nap, after which you're all tested again. The 90-minute nap was chosen because that's about how long it takes to complete a full sleep cycle.

Before your nap, one of the researchers vigorously scrubs small parts of your scalp to remove dead skin cells that reduce electrical conductivity. The researcher then applies a conductive gel to the spot, and affixes

electrodes that lead to an EEG[2] that will monitor the electrical activity in your sleeping brain. When the EEG shows that your brain is producing a slow-wave sleep pattern (a Delta wave), one of the two piano melodies you've been learning is played 20 times over four minutes, softly enough so you don't wake up. You heard the high melody while you slept. Your friend heard the low one.

On the after-nap test of the two melodies, the research team found that people did significantly better on the melody that was played during their nap. Your sleeping brain actually learned from those 20 repetitions! It's a pretty amazing finding, I think. Perhaps in the future we could don a sleeping cap that will help us reinforce what we've learned during the day while we sleep.

That's probably a few years away, at least. The good news is that regular sleep is absolutely essential to learning. There are many other experiments on the sleeping brain that provide clear and mounting evidence of the importance of sleep not only in solidifying what you've already learned, but sleep helps you *prepare* to learn, too.

Profound dreams aside, sleep is literally mind-expanding. During sleep, interstitial space within the brain expands up to 60 percent, "resulting in a striking increase in convective exchange of cerebrospinal fluid with interstitial fluid."[3] The theory is that the space within a sleeping brain expands so toxins produced in the brain when you're awake can be more easily flushed out.

Matthew Walker, research psychologist at UC Berkeley, likens the brain to an e-mail inbox. After you've been awake for a while, your inbox is full; until you empty it, incoming messages will bounce, unreceived. Sleep empties your mental inbox. The process of consolidation in sleep is like moving the important items from your email into a folder. For the brain, that folder is long-term memory. In consolidation, unnecessary information—junk mail—is discarded in order to prepare your brain to take in more information. Sleep helps restore the brain to a more receptive state, like a sponge that's been squeezed dry in order to soak up more information.[4]

In the research paper that introduced the term "deliberate practice" and the notion that it takes 10,000 hours to achieve serious mastery in a

field, the researchers found that most professional musicians they interviewed napped in the afternoon, after their main practice session, and before their later, less rigorous practice session.[5] Nearly every musician I've spoken with about practice says they try to nap regularly, and some nap every day.

You can manipulate your nap to enhance abilities like creativity, memory, or performing physical motions. One reason for this is that the time you choose for your nap affects the kind of sleep you get. Each stage of sleep performs a different function.

Stages of Sleep

We've long understood that not all sleep is the same, whether it's the hypnogogic falling-asleep stage, the eye-twitching stage, known as REM sleep (rapid eye movement), or the deeper kinds of sleep. Researchers have identified five stages of sleep.

The stages cycle around about every 90 minutes as we sleep until we wake up. The very first sleep stage—falling asleep—only happens once, for obvious reasons. The other stages cycle through repeatedly until you wake up. Knowing about each stage of sleep will help you get the most out of your nap.

- ◊ **Stage One (2-5 minutes)**: Falling asleep. During this stage, linear, rational thought breaks down, a state many creative people have found fruitful. Thomas Edison and Salvador Dalí would start a nap with metal objects in their hands. As they fell asleep, the object would fall, make a noise, and wake them up, often with a solution to a problem (Edison), or a bizarre image (Dalí).
- ◊ **Stage Two (~20 minutes)**: Rhythmic brain activity called "sleep spindles" and "k complexes" are observed, processes implicated in strengthening neuronal connections. Body temperature drops and the heart slows. Stage Two sleep is important for learning physical movements (motor memory) and procedural memory (doing something), like learning how to hold a violin bow, or making the movements necessary to play a Chopin nocturne or improvise in the key

of D^b. Stage Two sleep is also necessary for implicit memory, things you learn without consciously trying, like listening to a new band, or remembering the way to your new teacher's house.

◊ **Stages Three & Four (time varies)**: Deeper sleep is also called Delta sleep or slow-wave sleep (SWS) because the brain produces slow Delta waves during these stages. In these stages, production of the "stress hormone" cortisol stops and growth hormone production increases, helping to repair the body's tissues. Neural activity is minimal, which may help clear the brain/mind of useless memories. These stages are vital for declarative memory, which is remembering consciously learned things, like melodies, scales, music theory, etc.

◊ **Stage Five (length increases over time)**: This stage is also known as REM sleep (rapid eye movement), and most vivid dreaming occurs during this stage. Your heart speeds up and your blood pressure spikes, increasing blood flow to the brain as much as 50 percent more than when you're awake. Neurons produce Beta waves similar to the awakened brain. There is a link between REM sleep and improvement of memory, as well as evidence that REM sleep plays a role in transferring important short-term memories to long-term memory. REM sleep is also crucial for building emotional memories (important if you're trying to put emotion into your music). Perceptual skills like pitch identification (aural) or note-reading (visual), are solidified in REM sleep. Finally, REM sleep is associated with a boost in creativity and heightened sensory perceptions, like hearing.

There's direct evidence of a connection between sleep and music learning, too. The first study I'm aware of that shows evidence of sleep's impact on music learning was conducted by Robert Duke and Amy Simmons. They examined piano players learning a short melody. After the musicians learned the melody initially, they were tested at 12- and 24-hour

intervals; some got sleep, and some didn't. There were "significant sleep-dependent improvements in performance accuracy in the retests that followed intervals of sleep, and no significant improvements following intervals that did not include sleep."[6] Duke and Simmons examined the effects of a full night's sleep, and asked their participants explicitly to not take a nap, but there is lots of evidence that napping is also a highly effective way to boost learning speed.

Veteran actors know that after an intense session of memorizing lines, it's best to take a nap immediately. If you're memorizing music, or anything else, the *best* thing you can do after a cram session is to go to sleep for at least 90 minutes before you do anything that interferes with the information you just stuffed into your noggin. If you take a nap immediately after your most intense practice session of the day, you'll learn the most quickly. It's no coincidence that researchers who study experts find that this is exactly what they do. Nap time isn't just for kids.

Nap Taxonomy

Here are three different types of nap. Each will affect you in slightly different ways.

The Guilt-Free Power Nap

5-20 minutes: The power nap is too short for you to slip into Stage Two sleep, but long enough to clean out the "inbox." Naps shorter than five minutes have not been found to have any benefits. Even on a super-busy day, a nap will help you power through better than coffee.[7] I've found that even a 10-15 minute nap will boost my alertness well into the evening. Another benefit of the power nap is that you won't feel as guilty when you boast about the awesome nap you just had.

The Goldilocks Nap: Just Right

30-90 minutes: This one is long enough to put you into Stage Two sleep, as well as about 15-20 minutes of Stage Three sleep and, if you time it right, some REM sleep. It's a good idea to buffer your nap time with 5-10 minutes on either side to give you time to both nod off and wake up.

The Weekend Nap (aka The Thanksgiving Nap)

90-180 MINUTES: This is a doozy of a nap. You don't want to nap more than three hours because then you're not napping, you're cutting into your nighttime sleep, which might throw your natural sleep out of whack. If you wake up during Stage Three or Four sleep, you'll probably feel groggy. It's best to nap in 90-minute increments. More on this important topic below.

FIVE TIPS FOR NAP NIRVANA

Here are a few suggestions to squeeze the most juice out of your nap time. When I'm lucky enough to carve out some time for a nap, this is how I do it, but you should certainly tweak these guidelines to suit your own needs.

TIMING IS EVERYTHING

The best time for a nap is between your main practice session and practice sessions later in the day. A strategically placed nap like this performs two functions: it allows your sleeping brain to consolidate and store the important stuff you've been practicing, and at the same time, wipes the slate clean so you're ready to take in more during your next practice session, later in the day.

Because of circadian rhythms, your natural sleep cycle, and the sleep debt you accrue with every waking moment, the kind of nap you take depends on when you take it. Naps in the morning after a good night's sleep tend to have more REM sleep. A nap with lots of REM will help boost creativity and implicit memory. Afternoon naps, when you've accrued more sleep debt, tend to have more Stage Three, or slow-wave sleep, important for motor memory and explicit memory.

Ideally, you want to balance Stage Two, Stage Three, and REM sleep. Because the amount of each stage of sleep you get during a nap changes the longer you stay awake, the ideal time for a balanced nap changes according to when you woke up. Lucky for us, nap researcher Sara Mednick has created a handy sleep wheel to determine your ideal nap time, a link for which can be found at the end of this chapter.

However, "ideal" might not mean a nap that balances all the stages. If you're composing or memorizing or improvising, you'd probably want more REM sleep; if you're learning theory or how to actually *do*

something, you'd be better off with a nap heavy in Stage Two and slow-wave sleep.

You might also consider a quick nap before a performance. Singer-songwriter Erin McKeown, New York Philharmonic trumpeter Ethan Bensdorf, and Indian classical vocalist Prasad Upasani all said they like to take a quick nap before performances. Given the research that shows how a nap refreshes the brain and body, a pre-performance nap is a great idea.

Nap in 90-minute increments (not more than two)

A full sleep cycle lasts around 90 minutes. Anything longer, and you just start in on another sleep cycle. It's not necessary to nap 90 minutes, of course. Sadly, few of us can regularly spare that kind of time every day. Shorter naps are also beneficial. We're capable of nano-naps of a few seconds or a minute or two, but five minutes is the shortest amount of nap time that's been shown by research to be beneficial.

If you've ever woken from a deep sleep, you've experienced *sleep inertia*, that groggy feeling, as if you're underwater and you can't quite wake up all the way. To avoid sleep inertia and bounce back to wakefulness easily, avoid waking during Stage Three or Stage Four sleep. There's an app for that. It's called *Sleep Cycle* for Apple devices, or *Sleep Bot* for Android devices. Another way to banish the grogginess is physical activity, splashing water on your face, or downing a double-shot of espresso. It'll take about 45 minutes for that sweet caffeine to reach your brain.

Delete Distractions

Put any and all devices on mute (except a phone alarm if you're using it). Take the phone off the hook. Hang a "do not disturb" sign on your door, both metaphorically and literally; turn off the computer. Your email and the Rabbit Hole that is the Internet will be waiting for you when you wake. Vulnerability can also be a distraction, so think twice before falling asleep in a public place. If you're in a noisy environment and can't control the noise, consider earplugs or a white-noise generator.

Get Prone & Relax

A study by Chinese researchers found that even for a quick power nap, you're better off if you can get horizontal when you nod off.[8] Take

off your shoes, loosen any constricting garments, use a nice pillow, and consider a light blanket, since your body temperature drops when you sleep.

If you're too keyed up to get to sleep easily, it's helpful to start at your toes and progressively relax as you move up your body, mentally commanding your muscles and other body parts to relax. As you focus on a body part, take a deep, easy breath and gently tense the muscle. On the exhale, relax as though that body part is melting into the couch. This gets me to sleep just about every time, but on the rare chance that it doesn't, the relaxation is still refreshing.

Wakey Wakey

Waking slowly is nice. Nobody likes to be blasted awake by a raucous klaxon. Waking up like that is bound to leave you cranky. If you have the option, it's best to wake up gradually. I've found that it's easier to wake back up if I nap in a room that has plenty of natural light. Others prefer a dim room, which may help if you have trouble falling asleep because darkness induces the pineal gland to produce melatonin, a naturally produced chemical that helps you fall asleep. Try napping in both light and dark conditions to see which you prefer.

To ensure you don't wake feeling groggy out of Stage Three and Four sleep, plan your nap time. Use one of the apps I mentioned earlier (*Sleep Cycle* or *Sleep Bot*) or set your alarm judiciously. To get a handle on good nap times, check out Dr. Mednick's nap time calculating wheel at http://is.gd/otogeh.

After discovering the ability the brain has to learn while sleeping, I've been programming my waking device (usually a phone or iPad) to play the tune I'm working on when it's time to wake up. The tune starts very quietly, and gradually grows louder until it wakes me up. I'm not sure this has any impact on my learning yet, but it's a nice reminder of what I'm working on, and it's a fairly gentle way to wake up. Often, I find myself whistling or humming the tune I wake up with for hours after I wake. Every repetition counts.

If you want to explode out of sleep like an ICBM launched from a submarine, try swilling a cup of coffee or some other form of caffeine

before your nap. This only works for the 45-minute or shorter nap, since it takes about 45 minutes for the caffeine to fully enter your system.

If you're unable or unwilling to nap, don't forget that regular sleep is also crucial. Trumpeter Avishai Cohen was talking about a painful gig, one that just didn't go right, and he tried to figure out why it hadn't worked, reviewing his practice routine for a day or two before the gig. A young dad at the time, Avishai said, "I did everything right, I just had one and a half hours of sleep, and my body was tired, and that's why it hurt." Unless you have a young child like Avishai did, try to get a good night's sleep!

Extension

Slow-Wave Sleep and Learning

See what an EEG-covered head looks like and learn about slow-wave sleep's role in learning. On the Web: http://bit.ly/R9Toyg

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[1] Antony, Gobel, O'Hare, Reber, & Paller, 2012.

[2] Electroencephalograph: a device that measures millisecond-level changes in voltage produced by the flow of ions between neurons in the brain.

[3] Xie, et al., 2013, p. 373..

[4] Mander, Santhanam, Saletin, & Walker, 2011.

[5] Ericsson, Krampe, & Tesch-Römer, 1993.

[6] Simmons & Duke, 2006, p. 257.

[7] Mednick, 2008.

[8] Zhao, Zhang, Fu, Tang, Zhao, 2010.

Chapter 42
Performance Practice

You've got to learn your instrument. Then, you practice, practice, practice. And then, when you finally get up there on the bandstand, forget all that and just wail.
Charlie Parker, musician (1920-1955)

Remember Nicholas Barron, the Chicago singer-songwriter from way back in Chapter 2? Nicholas told me, "I never practice," a statement that puzzled me, because he performs so powerfully. His answer led me on a merry chase to understand practice more deeply. Among other things, Nicholas helped me begin to understand that for some musicians "practice" is a dirty word. Nicholas and every other musician I've spoken with about practice taught me that practice means more than just sitting in a room working on technique. What I should have asked Nicholas was not "how do you practice," but "how do you get better?"

Nicholas has undoubtedly improved as a musician from when he started in the 1980s impersonating Elvis and other pop musicians at his high school talent shows. In 2007 Nicholas was one of the musicians featured in the New York Times *Emerging Artists Series* during which singer-songwriter stalwart James Taylor called him "undeniable." Nicholas has put out over a dozen albums, and in addition to a regular gig opening for Buddy Guy at his Chicago blues club, Nicholas has opened for Al Green, BB King, Johnny Cash, Joan Armatrading, Nelly Furtado, The Neville Brothers, G. Love, The Doobie Brothers, Subdudes, Maceo Parker, Michael Bolton, Charlie Hunter, and many others.

Talking with Nicholas is like trying to catch a firefly: as soon as he lights up and you head towards him with your metaphorical net, he flits off to another location in anything but a straight line and lights up again. During our interview, as Nicholas pondered how he got better, he bounced from topic to topic and made lateral leaps of insight. He said, "I'm a horizontal thinker." That doesn't mean he does his best thinking lying down, though. Talking with Nicholas usually involves laughter.

Nicholas's road to musical fluency had some rough spots. Nicholas said he'd always struggled with conventional practice. He said, "Practice hurts my brain. It literally hurts my brain." Ideas most of us have about practice (repetition, scales, schedules, patterns, alone in a room, etc.) are almost thoroughly rejected by Nicholas, not because he thinks those methods are worthless (he doesn't), nor because he has no experience with them (he does), but because of the challenges he faces with ADHD (Attention Deficit Hyperactivity Disorder), an influence Nicholas mentioned several times during the interview. Like any kid who grew up in the '80s, Nicholas wasn't diagnosed with the disorder and had to find his own way to deal with the challenges. In music, Nicholas discovered that, for him, the best way to improve his skills was performance. It was hard-won knowledge.

On his path to musical fluency, Nicholas made several stops and starts, bumping up against the challenges ADHD presented with getting better at music. His first tangle with conventional ideas of practice came from his time at the New England Conservatory of Music as a candidate for Gunther Schuller's prestigious Third Stream Program, a program for further educating accomplished musicians that drew from elements of jazz and classical music. Notable musicians associated with the program include Pat Metheney (one of Barron's idols), pianist Brad Mehldau, and guitarist John Medeski, among many others.

Because Nicholas got a late start in music, he didn't have the music theory knowledge the program required. On the merit of his ability, Nicholas was conditionally accepted into the program and had a year to get his theory chops together. This involved practice, the conventional kind. He began to realize that he had a different approach to getting better.

Nicholas said that as he was preparing, he hung out and jammed with some musical heavies who were in the Third Stream program, one of whom was guitarist John Medeski. Nicholas said, "My idea about practice is *doing*, and basically getting your ass kicked." By "doing," Nicholas meant performing, and playing with others. Nicholas auditioned in front of Pat Metheney, but he didn't make it into the program. He moved on to the University of Cincinnati to continue his music studies, and it was there that performance-as-practice really took hold for him.

A master class with jazz trumpeter Pat Harbison was influential in helping Nicholas discover how performance could become his route to getting better. Harbison told the students to play anywhere, everywhere, and as much as possible. Nicholas remembers, “I took it to heart. I *heard* that. I didn’t hear the notes, I didn’t hear the ‘do this.’ He said, ‘Play, play, play,’ and that’s what I remember.”

Still frustrated with conventional practice, Nicholas began to perform as much as possible. He was able to sit in three nights a week with a combo led by Jimmy McGary, a Cincinnati sax man who “looks like Santa Claus and plays like Charlie Parker.” Nicholas went to London and played in the Tube, living in a squat with other musicians and playing all day long. In 1987 he moved back to Chicago and began playing in the south side El train stations, sometimes eight hours a day, every day, for nearly four years. *That* was his practice. So, what is it about performance that is so helpful? Good question.

Like many people, my own experience with performing music was (and is) heavily influenced by school music. In school music, performances are rare, special events: serious and important. In school music, there are usually only three or four big concerts spread throughout the year. You’ve got one shot to show what you’ve been doing for the last three months. That’s a pressure cooker. Performance is already a fairly high-stress situation, and we all know that when you do something unfamiliar, things can and will go wrong. This is a good thing for learning, but more on that in a bit.

Anybody would agree that three or four performances a year is a paltry amount. Nicholas Barron and most other professionals regularly do three to four performances in a weekend. Performance *is* practice, and a very special kind of practice.

I asked jazz guitarist Bobby Broom what’s changed the most about his practice over the years. He laughed and said, “I do it much less!” It’s true of a lot of players because the longer you practice, the more efficient you become. Bobby said he’s had long stretches of time during which his practice consisted of demanding performances several times a week, and little or no conventional practice. Bobby played with Sonny Rollins for a total of around ten years, as well as Miles Davis, Max Roach, Kenny

Burrell, and Eric Alexander, so when Bobby says demanding performances, he's not kidding.

A performance is like a test. The value of a test isn't that it measures your ability; the value comes from retrieving information from memory. The process of retrieving those memories and actions solidifies learning better than anything else you can do. The more you retrieve skills from memory, and the more varied that retrieval is in both time and place, the better you learn it. That's just one reason why performance is so great for learning. Performing is a unique method of retrieval because there's an added dimension of social interaction involved, upping the ante a bit. Performing makes you a bit nervous, and learning to deal with that nervousness is important.

Embrace the nervousness you feel before a performance. It's a good thing. The butterflies will probably never go away, and you don't want them to. At 85 years old, with decades of performances to his credit, Tony Bennett said, "At this point I welcome the butterflies, because that means you care."

Imagine that normally you drive a VW camper van. That's practice: chill, no pressure. Performance is a Formula One race car. If you don't have experience controlling that kind of power, you're probably going to crash. When you have to *bring it* for a performance, if you've practiced performing, you'll be able to handle the butterflies and nerves that go along with performing. How do you get that practice performing? Renowned cello teacher Hans Jensen said:

> When you have things coming up, just ask your friends, one after the other to come in, and play for them. Sometimes our performance is such a big event; it becomes something so special that you get all afraid from it. It shouldn't be like that. I think we can learn a lot from pop musicians. Don't take ourselves so serious!

Another way to get that practice is to imagine you're performing while you practice. Rex Martin said, "I actively practice performing. I'm performing in my practice room as if there's 2,500 people listening to me; then it's just like performing." Rex gave me one final piece of sage advice that he got from Bud Herseth, who said, "We have to be careful about

practice, because we start to practice practicing. We need to practice performing.”

Extension

Nicholas Barron: *Use Me Up*

Nicholas sings, plays, and does mouth percussion on the Bill Withers tune *Use Me Up*. On the Web: http://bit.ly/1lR7RJl. Barron’s interview on practice can be found at http://is.gd/otefic.

Coda
Moving Forward

The end of a melody is not its goal: but nonetheless, had the melody not reached its end it would not have reached its goal either. A parable.
Friedrich Nietzsche, philosopher (1844-1900)

Overthinking practice is easy to do. It's an excellent criticism of this very book, in fact. But early on in this project when wrestling with that issue, I came to realize that it's better to think a lot about practice than to never think about it at all. And even more important than that, you've just got to dive in and *do* it. I've learned loads of new ideas over the course of this project, ideas that have boosted my own ability to make music, and I hope you've found helpful approaches in these pages, too.

More than anything else, I hope this book has helped you to see that talent isn't some natural ability. The "gift" part of being gifted is having the luck to be born into a rich musical environment. I hope this book has helped you begin to see that talent is earned through diligence, effort, and practice. Immerse yourself.

Learning how to play music is an endless journey, and like any journey, the horizon recedes as you move forward; there is always something more in the distance. This book doesn't hold all the answers, or even most of them. I encourage you to seek out other sources. Most of the musicians I met echoed trumpeter Avisahi Cohen, who said, "I'm still trying to figure out how best to practice." If you can adopt that attitude, you'll always have forward motion.

I think one of the reasons so many top-notch music professionals I've spoken with about practice have said they're still trying to figure out how to do it best is that there is always a further horizon. If you want to keep getting better, you have to reach beyond the horizon of what you know, beyond your current ability, whatever it is. But how can you know what you don't know? Only through experimentation. That's why a creative approach to practice is so crucial, because that creativity and willingness to change things up helps you figure out how to practice. Even veteran musicians bump up against their limitations and get stuck.

My second-favorite question to ask a world-class professional musician is, “Have you ever been stuck in your practice?” I like asking the question because the typical answer is something like, “Every single day.” Good practice is all about working on something you can’t do, so it’s natural to feel stuck. Embrace that struggle, because that’s what good practice is. Practice is often fun, but it’s not supposed to be easy. Don’t label something you can’t play as “difficult,” though. When you label something you can’t play as difficult, that label sticks, even after you’ve mastered it. Instead, think of challenging music not as difficult, but simply as unfamiliar. Good practice is all about embracing the challenge of making the unfamiliar, familiar.

The nature of practice is dynamic, like a pinwheel in motion. Real, vibrant, in-the-wild practice moves; colors and shapes blur together and it’s a challenge to perceive exactly how it works and what the blades look like. The only way to know practice for sure is to play with it.

My fear is that, after reading this book, it might seem that practice is a complicated, complex endeavor, but it’s not. Don’t get caught up with the intellectual lest you neglect the practical. Gypsy jazz guitarist Stephane Wrembel said, “There is no magic trick. You just have to do it. You have to figure it out.” You don’t need fancy devices or tons of information or a fine instrument or expert help to learn how to practice. Just *do* it. Go play. Pay attention, experiment, learn from any source you can find and you’ll figure out what works for you.

Come back and re-read this book after a year or two of practice, and I bet you’ll find another tidbit or two that will help you take it to the next level.

Never stop learning.

Remember that talent is practice in disguise.

You have my best wishes for your continued musical development. I look forward to hearing your music out in the world. Maybe we can play together some time.

Good luck with your practice!

peace,
Jon

Additional Material

Appendix

Strictly Commercial
Bibliography
References

The modern king has become a veriform appendix—useless when quiet, when obtrusive in danger of removal.

H. L. Mencken, journalist, 1880-1956

The Stinger[1]
Strictly Commercial

Art is making something out of nothing and selling it.
Frank Zappa, musician (1940-1993)

Fats Waller was paid two bottles of gin for his tune *Ain't Misbehavin'*, a song he'd penned on a paper bag in 1929 that went on to earn millions of dollars.[2] Sadly, it's easy to find lots of stories in the music industry like that, especially from the early days of recording. Hunter S. Thompson is famously misquoted as writing, "The music industry is a cruel and shallow money trench, a long plastic hallway where thieves and pimps run free and good men die like dogs. There's also a negative side." Thompson didn't write it quite like that, but it rings true, doesn't it? Business and Art have never been the best of bedfellows.

Sharing music with others and the joy of making music is the main reason so many people practice so diligently. Money has nothing to do with that pleasure. Great live music is one of the best gifts you can give or receive. Good live music is social glue, and making music with others is its own reward, one that reaches *far* beyond mere monetary compensation. However, if you're interested in supporting yourself financially with your music, I humbly offer up the following advice.

When you see a busker playing on the street or in a subway, what do you expect to see? An open case, or a tip jar, of course. If you want to be a professional musician, don't play for free unless you're playing with friends and family, for special occasions, around the campfire, at the local open mic, or similar social situations where the point is community, service, fun, or revolution. Even if you're practicing in public, open up your case and collect donations. Nothing more I could say would be funnier or snarkier than one musician's response to a restaurant's request for musicians to play for free:

> **Restaurant**: We are a small and casual restaurant...looking for solo musicians to play in our restaurant to promote their work and sell

> their CD. This is not a daily job, but only for special events which will eventually turn into a nightly event if we get positive response. More jazz, rock, and smooth type music, around the world and mixed cultural music. Are you interested to promote your work? Please reply back ASAP.
>
> **Musician's reply**: Happy new year! I am a musician with a big house looking for a restaurateur to promote their restaurant and come to my house to make dinner for my friends and me. This is not a daily job, but only for special events which will eventually turn into a nightly event if we get positive response. More fine dining and exotic meals and mixed ethnic fusion cuisine. Are you interested to promote your restaurant? Please reply back ASAP.

If you're playing in a commercial space that would benefit from live music, you should be compensated with more than "exposure" for the considerable amount of time you've spent in practice. As the joke goes: people *die* from exposure. Your growing musical expertise is valuable, and don't let anybody convince you otherwise. If a musician's hourly rate was 5¢ for every hour they'd practiced, nobody would ever be hired because it would be too expensive! There is nothing shameful or dishonorable about asking to be paid fairly for your musical skills.

In addition, fair compensation shows respect for other musicians who also want (or *need*) to support themselves with their music. If you play for free in a commercial space, you're undermining the idea that musicians should be compensated for their artistic efforts. You might even be taking a job from another working musician. Not cool.

No matter what genre of music you enjoy, you're part of a loose brotherhood and sisterhood of musicians who will welcome you with open arms all around the world, even if you don't speak the same language. Respect that relationship. Be skeptical about playing for free in a commercial space. When I was in high school, my brass quartet played for tourists in a local store, and even though we were in high school in a small Alaskan town, we were paid for our musical services.

Supporting yourself independently through creative endeavors is never a sure or easy thing, but more and more folks are doing just that thanks to ever-cheaper computers and our increasing digital connectivity.

The music industry, the publishing industry, and now—with the advent of 3D printing—even the manufacturing industry are all evolving to empower independent creators.

Many of the musicians who contributed to my understanding of practice are just such independent artists. You can find links to their sites on this book's website, www.ThePracticeOfPractice.com. If you like their music, help them out: book them for a gig, a residency, or a master class, and buy their music.

What I'm taking too long to say is that this book is also such an independent creation, and I need your help getting the word out about it. The book has no marketing budget, no ad campaign, no national book tour, and barely any kind of promotion. I believe word of mouth is the most reliable and authentic form of promotion. If you liked the book and found it useful and/or entertaining, help a brother out. Throw me a positive review on this book's Amazon.com or Goodreads.com page, recommend the book to others, buy one for a musician or a music teacher you know, and ask your local librarian to get a copy so even more people can benefit from this information for free. If all that's too much work, shoot me an email to let me know of someone who might benefit from a copy. Thanks in advance for taking the time. I do very much appreciate it.

My own understanding of practice is still evolving, and I'm always searching for more musicians to talk to about practice. Sometimes I'll conduct more formal interviews with musicians and post them to this book's blog/podcast. You can find new and updated practice information there, including new links if any of the links in the book become inactive.

See you on the Internets....

Extensions

Music Industry Advice

The 360 Deal has tons of tips for making a living through music. Proceeds go to an Indian charity bringing music to impoverished kids. On the Web: https://leanpub.com/360deal

A List of Musical Gear

An Amazon list that includes gadgetry and gear mentioned in the book. High quality at the least expense. A good place to start. On the Web:

http://amzn.to/1nqe3Jq

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[1] A “stinger” is a short final chord of a march, like the stinger at the end of John Philip Sousa’s *The Stars and Stripes Forever*. Stingers, played by the entire ensemble, are like the final punctuation mark of a story.

[2] Tony Bennett, in *The Zen of Bennett*. On Netflix: http://is.gd/idigul

Appendix
Read Between the Lines

While knowledge may provide a useful point of reference, it cannot become a force to guide the future.

Herbie Hancock, musician (b. 1940)

Helpful Books

I'm an avid and critical reader, and recommending books to others is a duty I take seriously. The following books have had a significant impact on me, both personally and professionally, and I highly recommend each of them. If you're looking for a good, interesting read to take your understanding of practice further, start with these. You can find links to all these titles on this book's web site: **www.ThePracticeOfPractice.com/reading**

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The following list of research articles, books, and other sources have all been influential either directly or indirectly in the writing of this book and in the development of my thinking about music practice. I realize many of the references that follow aren't quoted or referenced directly in the text, but I provide them here with the hope that others will find them useful for their own investigations into music practice.

I'm indebted to the musicians, scholars, researchers (and their participants), universities, and publishers responsible for this important body of work. Thank you.

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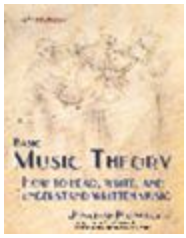

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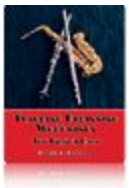

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